

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
32–17 Ma	" <i>Macrochlamis</i> " <i>magnolia magnolia</i> (Conrad) 32–17 Ma	" <i>Macrochlamis</i> " <i>magnolia</i> (Conrad)	Genus not living, Oligocene to Pliocene
32–17 Ma	" <i>Macrochlamis</i> " <i>magnolia magnolia</i> (Conrad) 32–17 Ma	<i>Lyropecten magnolia</i> (Conrad)	Genus not living, Oligocene to Pliocene
32–17 Ma	" <i>Macrochlamis</i> " <i>magnolia magnolia</i> (Conrad) 32–17 Ma	<i>Lyropecten</i> (or <i>Macrochlamis</i>) <i>magnolia</i> (Conrad)	Genus not living, Oligocene to Pliocene
32–17 Ma	" <i>Macrochlamis</i> " <i>magnolia magnolia</i> (Conrad) 32–17 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>magnolia</i> Conrad	Genus not living, Oligocene to Pliocene
32–17 Ma	" <i>Macrochlamis</i> " <i>magnolia magnolia</i> (Conrad) 32–17 Ma	<i>Pecten magnolia</i> Conrad	Genus not living, Oligocene to Pliocene
30–26 Ma	" <i>Macrochlamis</i> " <i>magnolia ojaiensis</i> Smith 30–26 Ma (Smith, 1991a)	<i>Pecten</i> (<i>Lyropecten</i>) <i>magnolia</i> Conrad	Genus not living, Oligocene to Pliocene
30–26 Ma	" <i>Macrochlamis</i> " <i>magnolia ojaiensis</i> Smith (Agua Sandstone)	" <i>Macrochlamis</i> " <i>magnolia ojaiensis</i> Smith	Genus not living, Oligocene to Pliocene
30–26 Ma	" <i>Macrochlamis</i> " <i>magnolia ojaiensis</i> Smith (Jewett Sand)	<i>Lyropecten magnolia</i> (Conrad)	Genus not living, Oligocene to Pliocene
27–2.5 Ma	" <i>Nucula</i> " n.sp.?	" <i>Nucula</i> " n.sp.?	Taxon not living, Oligocene to Pliocene
5–2.5 Ma	<i>Acanthina emersoni</i> Hertlein and Allison	<i>Acanthina emersoni</i> Hertlein and Allison	Genus, 48N–1S
13–8 Ma	<i>Acanthina norma</i> Nomland	<i>Acanthina</i> (<i>Monoceros</i>) <i>norma</i> Nomland	Genus, 48N–1S; intertidal, on rocks
13–8 Ma	<i>Acanthina perrini</i> Trask	<i>Acanthina perrini</i> Trask	Genus, 48N–1S
5 Ma–H	<i>Acanthina punctulata</i> (Sowerby)	<i>Acanthina punctulata</i> (Sowerby)	37N–32N
N.D.*	<i>Acanthina</i> sp.	<i>Acanthina</i> sp.	Genus, 48N–1S
5 Ma–H	<i>Acanthina spirata</i> (Blainville)	<i>Acanthina spirata</i> (Blainville)	48N–19N; at entrances to bays
5 Ma–H	<i>Acanthina spirata</i> (Blainville)	<i>Monoceros engonatum</i> Conrad	48N–19N
5 Ma–H	<i>Acanthina tuberculata</i> (Gray)	<i>Acanthina tuberculata</i> Gray	48N–1S
27–23 Ma	<i>Acanthocardia reedi</i> (Loel and Corey)	<i>Cardium</i> (<i>Acanthocardia</i>) <i>reedi</i> Loel and Corey?	Genus, Mediterranean and West Africa
N.D.	<i>Acanthocardia</i> sp.	<i>Cardium</i> (<i>Acanthocardia</i>) sp. Loel and Corey	Genus, Mediterranean and West Africa
5–2.5 Ma	<i>Acesta</i> (<i>Acesta</i>) <i>hamlini</i> (Dall)	<i>Lima hamlini</i> Dall	<i>Acesta mori</i> (Hertlein), 37N–35N; genus, deep water, >500 m
8? Ma–H	<i>Acetocina</i> aff. <i>A. culcitella</i> (Gould)	<i>Acetocina</i> aff. <i>A. culcitella</i> (Gould)	58N–28N
5 Ma–H	<i>Acharax johnsoni</i> (Dall)	<i>Solemya</i> aff. <i>S. johnsoni</i> Dall	57N–12S; genus, 7 to 3294 m
23–17 Ma	<i>Acila</i> (<i>Acila</i>) <i>gettysburgensis</i> (Reagan)	<i>Acila</i> (<i>Acila</i>) <i>gettysburgensis</i> (Reagan)	Genus, 60N–27N; 5 to 1281 m
8–1? Ma	<i>Acila</i> (<i>Acila</i>) <i>semitrostrata</i> (Grant and Gale)	<i>Acila semirostrata</i> (Grant and Gale)	Genus, 60N–27N; subgenus, 45N, Japan to 20N
13 Ma–H	<i>Acila</i> (<i>Truncacila</i>) <i>castrensis</i> (Hinds)	<i>Acila conradi</i> Meek	60.4N–27.2N; 5 to 400 m
13 Ma–H	<i>Acila</i> (<i>Truncacila</i>) cf. <i>A. (T.) castrensis</i> (Hinds)	<i>Acila</i> cf. <i>A. castrensis</i> (Hinds)	60N–27N
13 Ma–H	<i>Acila</i> (<i>Truncacila</i>) cf. <i>A. (T.) castrensis</i> (Hinds)	<i>Acila?</i> cf. <i>A. castrensis</i> (Hinds)	60N–27N
13 Ma–H	<i>Acila</i> (<i>Truncacila</i>) <i>conradi</i> (Meek)	<i>Acila conradi</i> (Meek)	60N–27N; 5 to 400 m
23–13 Ma	<i>Acila</i> (<i>Truncacila</i>) <i>conradi</i> (Meek)	<i>Acila</i> (<i>Truncacila</i>) <i>conradi</i> (Meek)	Genus, 60N–27N; 5 to 1281 m
N.D.	<i>Acila</i> sp.	<i>Acila</i> sp.	Genus, 60N–27N; 5 to 1281 m
5? Ma–H	<i>Acmaea</i> cf. <i>A. funiculata</i> (Carpenter)	<i>Acmaea</i> cf. <i>A. funiculata</i> (Carpenter)	55N–25N
N.D.	<i>Acmaea</i> sp.	<i>Acmaea</i> sp.	Genus, 72N–16N
8? Ma–H	<i>Acmaea?</i> cf. <i>A. mitra</i> Rathke	<i>Acmaea?</i> cf. <i>A. mitra</i> Eschscholtz	65N–33N; intertidal to sublittoral
5 Ma–H	<i>Acteocina</i> aff. <i>A. inculta</i> (Gould and Carpenter)	<i>Acteocina</i> aff. <i>A. inculta</i> (Gould and Carpenter)	37N–33N, in shallow bays through Gulf of California
5? Ma–H	<i>Acteocina</i> cf. <i>A. culcitella</i> (Gould)	<i>Acteocina</i> cf. <i>A. culcitella</i> (Gould)	58N–28N; genus, intertidal to 293 m, on sand
5 Ma–H	<i>Acteocina eximia</i> Baird	<i>Acteocina eximia</i> Baird	58N–37N
5 Ma–H	<i>Acteocina harpa</i> (Dall)	<i>Coleophysis harpa</i> (Dall); also as <i>Retusa</i> (<i>Retusa</i>) <i>harpa</i> (Dall)	55N–30N; gravel, low tide to sublittoral; genus, 18 to 549 m
N.D.	<i>Acteocina</i> n.sp. Powell	<i>Acteocina</i> n.sp. Powell	Genus, 58N–8N

N.D. 5 Ma–H	<i>Acteocina</i> sp. <i>Acteon</i> (<i>Rictaxis</i>) aff. <i>A. (R.) grandior</i> Grant and Gale	<i>Acteocina</i> sp. <i>Acteon</i> aff. <i>A. grandior</i> Grant and Gale	Genus, 58N–8N 33N
8–5 Ma–H	<i>Acteon</i> (<i>Rictaxis</i>) cf. <i>A. (R.) punctocaelatus</i> (Carpenter)	<i>Acteon</i> cf. <i>A. punctocaelatus</i> (Carpenter)	37N–27N
8–5 Ma–H 17–13 Ma 17–13 and 8? Ma	<i>Acteon</i> (<i>Rictaxis</i>) <i>punctocaelatus</i> (Carpenter) <i>Acteon</i> (<i>Rictaxis</i>) <i>weaveri</i> Addicott <i>Acteon boulderanus</i> Etherington	<i>Acteon punctocalatus</i> (Carpenter) <i>Acteon</i> (<i>Rictaxis</i>) <i>weaveri</i> Addicott <i>Acteon boulderana</i> Etherington	37N–27N Genus, 37N–8N; genus, intertidal to 73 m, on sand Genus, 37N–8N
17–13 and 8? Ma	<i>Acteon boulderanus</i> Etherington	<i>Acteon boulderanus</i> Etherington	Genus, 37N–8N
17–13 Ma N.D. N.D.	<i>Acteon</i> cf. <i>A. quercus</i> ? Anderson and Hanna <i>Acteon</i> sp. <i>Acteon</i> sp.	<i>Acteon</i> cf. <i>A. quercus</i> Anderson and Hanna <i>Acteon</i> sp. <i>Acteon</i> sp.	Genus, 37N–8N; Eocene species Genus, 37N–8N Genus, 37N–8N
27–23 Ma 17–13 Ma 5 Ma–H 5–2.5 Ma 8 Ma–H 8 Ma–H	<i>Acutostrea</i> ? <i>miguelensis</i> (Hertlein) <i>Admete clatskaniensis</i> Anderson and Martin <i>Admete couthouyi</i> (Jay) <i>Admete dilleri</i> Martin <i>Admete rhyssa</i> Dall <i>Adula</i> cf. <i>A. gruneri</i> (Philippi)	<i>Ostrea miguelensis</i> Hertlein <i>Admete clatskaniensis</i> Anderson and Martin <i>Admete gracilior</i> (Carpenter) of Arnold <i>Admete dilleri</i> Martin <i>Admete rhyssa</i> Dall <i>Adula</i> cf. <i>A. falcata</i> (Gould)	Genus not living Genus, 71N–17N; 18 to 730 m 72N–33N Genus, 71N–17N 34N–32N 43N–28N; genus, intertidal to 18 m, boring into rocks, soft clay
23–17 Ma 13–8 Ma 13–8 Ma 13–8 Ma N.D.	<i>Aforia clallamensis</i> (Weaver)? <i>Agasoma sinuatum</i> (Gabb) <i>Agasoma sinuatum</i> (Gabb) <i>Agasoma sinuatum</i> (Gabb) <i>Agasoma</i> sp.	<i>Aforia clallamensis</i> (Weaver) <i>Agasoma sinuatum</i> (Gabb) <i>Agasoma sinuata</i> (Gabb) <i>Koilopectera sinuata</i> (Gabb) <i>Agasoma</i> n.sp. or sp. a	Genus, 65N–48N Genus not living Genus not living Genus not living Genus not living
23–13 Ma	<i>Agathotoma</i> (<i>Agathotoma</i>) <i>howei</i> (Anderson and Martin)	<i>Mangelia</i> (<i>Agathotoma</i>) <i>howei</i> Anderson and Martin	Genus, 37N–3S; subgenus, 25N–3S; genus, 18 to 92 m
23–13 Ma	<i>Agathotoma</i> (<i>Agathotoma</i>) <i>howei</i> (Anderson and Martin)	<i>Clathrodrillia howei</i> (Anderson and Martin)	Genus, 37N–3S; subgenus, 25N–3S
23–13 Ma	<i>Agathotoma</i> (<i>Agathotoma</i>) <i>howei</i> (Anderson and Martin)	<i>Drillia howei</i> Anderson	Genus, 37N–3S; subgenus, 25–3S
23–13 Ma	<i>Agathotoma</i> (<i>Agathotoma</i>) <i>howei</i> (Anderson and Martin)	<i>Mangelia howei</i> Anderson and Martin	Genus, 37N–3S; subgenus, 25N–3S
5 Ma–H 8–5 Ma N.D. N.D.	<i>Agathotoma hexagon</i> (Gabb) <i>Albina curta</i> Woodring <i>Aletes</i> sp. <i>Algadrilla</i> ? sp.	<i>Agathotoma hexagon</i> (Gabb) <i>Albina curta</i> Woodring <i>Aletes</i> sp. <i>Algadrilla</i> ? sp.	37N–33N Genus, 35–15N, Atlantic Genus, 55N–1S Genus, Gulf of California–5S
5–2.5 Ma? 5 Ma–H N.D.	<i>Algadrillia</i> n.sp. Powell 5–2.5 Ma? <i>Aligena cokeri</i> Dall <i>Alvania</i> sp.	<i>Algadrillia</i> n.sp. Powell <i>Aligena diegoana</i> Hertlein and Grant <i>Alvania</i> sp.	Genus, Gulf of California–5S 31N–3S; genus, 92 to 238 m Genus, 57N–8N, through Gulf of California; intertidal to 229 m
17–13 Ma	<i>Amaea</i> (<i>Scalina</i>) <i>durhami</i> (Keen)	<i>Ferminoscala durhami</i> Keen	Subgenus, 28N–3S, Gulf of California; genus, 10 to 1485 m
17–13 Ma 17–13 Ma 17–13 Ma N.D. N.D.	<i>Amaea</i> (<i>Scalina</i>) <i>durhami</i> (Keen) <i>Amaea</i> (<i>Scalina</i>) <i>whitei</i> (Keen) <i>Amaea</i> (<i>Scalina</i>) <i>whitei</i> (Keen) <i>Amauropsis</i> sp. <i>Amauropsis</i> sp.	<i>Scalina durhami</i> (Keen) <i>Ferminoscala whitei</i> Keen <i>Scalina whitei</i> (Keen) <i>Ampullina</i> sp. <i>Amauropsis</i> sp.	Subgenus, 28N–3S, Gulf of California Subgenus, 28N–3S, Gulf of California Subgenus, 28N–3S, Gulf of California Genus, 72N–60N; intertidal Genus, 72N–60N
8–5 Ma	<i>Americardia guanacastensis</i> (Hertlein and Strong)	<i>Americardia guanacastensis</i> (Hertlein and Strong)	Genus, 35N–15N Atlantic
13–8 Ma 17? or 13 Ma–H	<i>Amiantis</i> (<i>Amiantis</i>) <i>dalli</i> Clark <i>Amiantis callosa</i> (Conrad)	<i>Amiantis dalli</i> Clark <i>Amiantis callosa</i> (Conrad)	Genus, 35N–23N 34.4N–24.8N; below low-tide line along sandy beaches, to 20 m
13–8 Ma 13–8 Ma	<i>Amiantis callosa stalderi</i> (Clark) <i>Amiantis callosa stalderi</i> (Clark)	<i>Amiantis stalderi</i> (Clark) <i>Amiantis callosa</i> (Conrad) var. <i>stalderi</i> (Clark)	Species, 34.4N–24.8N Species, 34.4N–24.8N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13–8 Ma	<i>Amiantis callosa stalderi</i> (Clark)	<i>Pitaria stalderi</i> Clark	Species, 34.4N–24.8N
13–5 Ma	<i>Amiantis communis</i> Nomland	<i>Amiantis communis</i> Nomland	Genus, 35N–23N; below low-tide line along sandy beaches, to 20 m
27? or 23–13 Ma	<i>Amiantis diabloensis</i> (Anderson)	<i>Pitar diabloensis</i> (Anderson)	Genus, 35N–23N
27? or 23–13 Ma	<i>Amiantis diabloensis</i> (Anderson)	<i>Antigona diabloensis</i> (Anderson)	Genus, 35N–23N
27? or 23–13 Ma	<i>Amiantis diabloensis</i> (Anderson)	<i>Callista (Amiantis) diabloensis</i> Anderson	Genus, 35N–23N
27? or 23–13 Ma	<i>Amiantis diabloensis</i> (Anderson)	<i>Amiantis diabloensis</i> (Anderson)	Genus, 35N–23N
27? or 23–13 Ma	<i>Amiantis diabloensis</i> (Anderson)	<i>Cytherea diabloensis</i> Anderson	Genus, 35N–23N
23–13 Ma	<i>Amiantis mathewsonii</i> (Gabb)	<i>Amiantis mathewsonii</i> (Gabb)	Genus, 35N–23N
23–13 Ma	<i>Amiantis mathewsonii</i> (Gabb)	<i>Chione mathewsonii</i> Gabb	Genus, 35N–23N
N.D.	<i>Amiantis</i> sp.	<i>Amiantis</i> sp.	Genus, 35N–23N
N.D.	<i>Amiantis</i> sp.?	<i>Cytherea</i> sp. A.	Genus, 35N–23N
17–13 Ma	<i>Amiantis?</i> cf. <i>A. loeli</i> Wiedey	<i>Amiantis</i> (?) cf. <i>A. loeli</i> Wiedey	Genus, 35N–23N; intertidal to 18 m, in sand of exposed beaches
5 Ma–H	<i>Amnicola longinqua</i> Gould (see Taylor, 1966, p. 30, 51)	<i>Amnicola longinqua</i> Gould	Freshwater
N.D.	<i>Amnicola</i> sp.	<i>Amnicola?</i> sp.	Freshwater
5? Ma–H	<i>Amphissa</i> cf. <i>A. versicolor</i> Dall	<i>Amphissa</i> cf. <i>A. versicolor</i> Dall	44N–28N
8 Ma–H	<i>Amphissa reticulata</i> Dall	<i>Amphissa reticulata</i> Dall	58N–33N
N.D.	<i>Amphissa</i> sp.	<i>Amphissa</i> sp.	Genus, 58N–28N; intertidal to 641 m
13–5 Ma	<i>Amphiura sanctaerucis</i> Arnold	<i>Amphiura sanctaerucis</i> Arnold (Echinodermata)	Distribution data unreliable
23–13 Ma	<i>Amusium lompocensis</i> (Arnold) 23–13 Ma	<i>Pecten (Amusium) lompocensis</i> Arnold	Genus not living in eastern Pacific Ocean; Caribbean; 55 to 1481 m
23–13 Ma	<i>Amusium lompocensis</i> (Arnold) 23–13 Ma	<i>Amusium lompocensis</i> (Arnold)	Genus not living in eastern Pacific Ocean; 30N–15N Caribbean
23–13 Ma	<i>Amusium lompocensis</i> (Arnold) 23–13 Ma	<i>Amusium lompocensis</i> (Arnold)	Genus not living in eastern Pacific Ocean; 30N–15N Caribbean
23–13 Ma	<i>Amusium lompocensis</i> (Arnold) 23–13 Ma	<i>Pecten (Pseudamusium) lompocensis</i> Arnold	Genus not living in eastern Pacific Ocean; 30N–15N Caribbean
23–13 Ma	<i>Amusium lompocensis</i> (Arnold) 23–13 Ma	<i>Pecten (Amussiopecten) lompocensis</i> Arnold	Genus not living in eastern Pacific Ocean; 30N–15N Caribbean
23–13 Ma	<i>Amusium lompocensis</i> (Arnold) 23–13 Ma	<i>Pecten (Pseudamusium) lompocensis</i> Arnold	Genus not living in eastern Pacific Ocean; 30N–15N Caribbean
27–13 Ma	<i>Amussiopecten vanvlecki</i> (Arnold) 27–13 Ma	<i>Amussiopecten vanvlecki</i> (Arnold)	Genus not living
27–13 Ma	<i>Amussiopecten vanvlecki</i> (Arnold) 27–13 Ma	<i>Pecten (Pecten) vanvlecki</i> Arnold	Genus not living
27–13 Ma	<i>Amussiopecten vanvlecki</i> (Arnold) 27–13 Ma	<i>Pecten vanvlecki</i> Arnold	Genus not living
N.D.	<i>Anachis (Costoanachis)</i> sp.	<i>Anachis (Costoanachis)</i> sp.	Subgenus, 25N–5S, in Gulf of California; genus, intertidal, under rocks
17–13 Ma	<i>Anachis (Costoanachis) watsonae</i> Keen	<i>Anachis watsonae</i> Keen	Subgenus, 25N–5S, in Gulf of California
13 Ma–H	<i>Anadara (Anadara) concinna</i> (Sowerby)	<i>Anadara (Anadara) concinna</i> (Sowerby)	29N in Gulf of California–3S; genus, 9 to 90 m, sand or mud substrate
23–13 Ma or 8? Ma	<i>Anadara (Anadara) devincta</i> (Conrad)	<i>Anadara devincta</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California; genus, 9 to 112 m
23–13 Ma or 8? Ma	<i>Anadara (Anadara) devincta</i> (Conrad)	<i>Arca (Anadara) devincta</i> Conrad	Subgenus, 29N–5S, through Gulf of California; sand, mud, or mangroves
23–13 Ma or 8? Ma	<i>Anadara (Anadara) devincta</i> (Conrad)	<i>Anadara (Anadara) devincta</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
23–17 Ma	<i>Anadara (Anadara) lakei</i> (Wiedey)	<i>Arca lakei</i> Wiedey	Subgenus, 29N–5S, through Gulf of California

23–13 or 5? Ma	<i>Anadara (Anadara) montereyana</i> (Osmont)	<i>Anadara montereyana</i> (Osmont)	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) montereyana</i> (Osmont)	<i>Arca (Anadara) devincta montereyana</i> Osmont	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) montereyana</i> (Osmont)	<i>Anadara devincta</i> var. <i>montereyana</i> (Osmont)	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) montereyana</i> (Osmont)	<i>Anadara devincta montereyana</i> (Osmont)	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) montereyana</i> (Osmont)	<i>Arca montereyana</i> Osmont	Subgenus, 29N–5S, through, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) montereyana</i> (Osmont)	<i>Arca (Anadara) devincta montereyana</i> (Osmont)	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Anadara osmonti</i> (Dall)	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Arca montereyana</i> var. <i>barkeriana</i> Clark?	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Arca osmonti</i> Dall	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Arca (Anadara) osmonti</i> Dall	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Anadara (Anadara) osmonti</i> (Dall)	Subgenus, 29N–5S, through Gulf of California
23–13 or 5? Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Arca osmonti</i> Dall	Subgenus, 29N–5S, through Gulf of California
23–13 Ma	<i>Anadara (Anadara) osmonti</i> (Dall)	<i>Arca impavida</i> Wiedey	Subgenus, 29N–5S, through Gulf of California
N.D.	<i>Anadara (Anadara) sp.</i>	<i>Arca sp.</i>	Subgenus, 29N–5S, through Gulf of California
N.D.	<i>Anadara (Anadara) sp.</i>	<i>Anadara sp.</i>	Subgenus, 29N–5S, through Gulf of California
27–13 Ma	<i>Anadara (Anadara) topangaensis</i> Reinhart	<i>Arca microdonta</i> Conrad	Subgenus, 29N–5S, through Gulf of California
27–13 Ma	<i>Anadara (Anadara) topangaensis</i> Reinhart	<i>Anadara topangensis</i> Reinhart	Subgenus, 29N–5S, through Gulf of California
13–2.5 Ma	<i>Anadara (Anadara) trilineata</i> (Conrad)	<i>Anadara trilineata</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
13–2.5 Ma	<i>Anadara (Anadara) trilineata</i> (Conrad)	<i>Arca trilineata</i> Conrad	Subgenus, 29N–5S, through Gulf of California
13–2.5 Ma	<i>Anadara (Anadara) trilineata</i> (Conrad)	<i>Anadara (Anadara) trilineata trilineata</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
13–2.5 Ma	<i>Anadara (Anadara) trilineata</i> (Conrad)	<i>Anadara (Anadara) trilineata</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
13–2.5 Ma	<i>Anadara (Anadara) trilineata calcarea</i> Grant and Gale	<i>Anadara (Anadara) trilineata calcarea</i> Grant and Gale	Subgenus, 29N–5S, through Gulf of California
13–2.5 Ma	<i>Anadara (Anadara) trilineata calcarea</i> Grant and Gale	<i>Anadara trilineata calcarea</i> (Grant and Gale)	Subgenus, 29N–5S, through Gulf of California
8–2.5 Ma	<i>Anadara (Anadara) trilineata canalis</i> (Conrad)	<i>Anadara trilineata</i> (Conrad) <i>canalis</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
8–2.5 Ma	<i>Anadara (Anadara) trilineata canalis</i> (Conrad)	<i>Arca canalis</i> Conrad	Subgenus, 29N–5S, through Gulf of California
8–2.5 Ma	<i>Anadara (Anadara) trilineata canalis</i> (Conrad)	<i>Anadara (Anadara) trilineata canalis</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
8–2.5 Ma	<i>Anadara (Anadara) trilineata canalis</i> (Conrad)	<i>Anadara trilineata canalis</i> (Conrad)	Subgenus, 29N–5S, through Gulf of California
N.D.	<i>Anadara (Anadara?) sp.</i>	<i>Arca (Barbatia) n.sp.</i> Loel and Corey	Subgenus, 29N–5S, through Gulf of California
27–23 Ma	<i>Anadara (Anadara?) strongi</i> (Loel and Corey)	<i>Arca (Barbatia) strongi</i> Loel and Corey	Subgenus, 29N–5S, through Gulf of California
13? Ma–H	<i>Anadara (Rasia) formosa</i> (Sowerby)	<i>Anadara formosa</i> Sowerby	28N–5S; 11 to 82 m
N.D.	<i>Anadara sp.</i>	<i>Anadara sp.</i>	Genus, 34N–5S, through Gulf of California
13–8 Ma	<i>Anadara thauma</i> (Maury) (Smith, 1989)	<i>Anadara thauma</i> (Maury)	Panamic, but not listed by Keen (1971) or Bernard (1983)
5–2.5 Ma	<i>Angulararca californiensis</i> Noda (Noda, 1966, Pl. 1)	<i>Angulararca californiensis</i> Noda (Noda, 1966, Plate 1)	Genus not living
8–5 Ma	<i>Angulararca terminumbonis</i> (Grant and Gale) (Noda, 1966, Pl. 1)	<i>Angulararca terminumbonis</i> (Grant and Gale) (Noda, 1966, Plate 1)	Genus not living
5–2.5 Ma	<i>Anodonta kettlemanensis</i> Arnold	<i>Anodonta kettlemanensis</i> Arnold	Freshwater
N.D.	<i>Anodonta sp.</i>	<i>Anodonta sp.</i>	Freshwater
13 Ma–H	<i>Anomia peruviana</i> d'Orbigny	<i>Anomia limatula</i> Dall	37N–5S; on shells and rocks along open coast, intertidal to 120 m
13 Ma–H	<i>Anomia peruviana</i> d'Orbigny	<i>Anomia peruviana</i> d'Orbigny	36.6N–5.1S
N.D.	<i>Anomia sp.</i>	<i>Anomia sp.</i>	Genus, 37N–south of equator; intertidal to 120 m, on rocks or shells
13–8 Ma	<i>Anomia subcostata</i> Conrad	<i>Anomia subcostata</i> Conrad	Genus, 37N–south of equator
27–23 Ma	<i>Anomia vaquerosensis</i> Loel and Corey	<i>Anomia vaquerosensis</i> Loel and Corey	Genus, 37N–south of equator
N.D.	<i>Anomia? sp.</i>	<i>Anomia? sp.</i>	Genus, 37N–south of equator
8–5 Ma	<i>Antipeecten? praevalidus</i> (Jordan and Hertlein) 8–5 Ma	<i>Leptopeecten praevalidus</i> (Jordan and Hertlein)	Genus not living
8–5 Ma	<i>Antipeecten? praevalidus</i> (Jordan and Hertlein) 8–5 Ma	<i>Pecten (Leptopeecten) praevalidus</i> Jordan and Hertlein	Genus not living
8 Ma–H	<i>Antiplanes perversa</i> (Gabb)	<i>Antiplanes perversa</i> (Gabb)	55N–30N; genus, 55 to 1460 m
8 Ma–H	<i>Antiplanes perversa</i> (Gabb)	<i>Rectiplanes rotula</i> (Dall)	55N–30N
8 Ma–H	<i>Antiplanes perversa</i> (Gabb)	<i>Spirotropis perversa</i> (Gabb)	55N–30N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
8 Ma–H	<i>Antiplanes perversa</i> (Gabb)	<i>Pleurotoma perversa</i> (Gabb)	55N–30N
8 Ma–H	<i>Antiplanes perversa</i> (Gabb)	<i>Turris perversa</i> (Gabb)	55N–30N
8 Ma–H	<i>Antiplanes perversa</i> (Gabb)	<i>Turris perversa</i> Gabb	55N–30N
N.D.	<i>Antiplanes</i> sp.	<i>Antiplanes</i> sp.	Genus, 59N–30N
5–2.5 Ma	<i>Antiplanes voyi</i> (Gabb)	<i>Antiplanes voyi</i> (Gabb)	Genus, 59N–30N
5 Ma–H	<i>Arbacia incisa</i> (A. Agassiz)	<i>Arbacia incisa</i> A. Agassiz (Echinodermata)	28N–3S
13–8 Ma	<i>Arca (Arca) leptogrammica</i> Hall	<i>Arca leptogrammica</i> Hall	Subgenus, 28N–5S, through Gulf of California
13 Ma–H	<i>Arca (Arca) mutabilis</i> (Sowerby)	<i>Arca (Arca) mutabilis</i> (Sowerby)	25N–2S, Gulf of California; intertidal, under rocks to 82 m
13 Ma–H	<i>Arca (Arca) pacifica</i> (Sowerby)	<i>Arca (Arca) pacifica</i> (Sowerby)	28N–5S, Gulf of California; intertidal, under rocks to 137 m
8–2.5 Ma	<i>Arca (Arca) santamariensis</i> Reinhart	<i>Arca santamariensis</i> Reinhart	Subgenus, 28N–5S, through Gulf of California; intertidal to 137 m
5–2.5 Ma	<i>Arca (Arca) sisquocensis</i> Reinhart	<i>Arca sisquocensis</i> Reinhart	Subgenus, 28N–5S, through Gulf of California
5–2.5 Ma	<i>Arca (Arca) sisquocensis</i> Reinhart	<i>Arca (Arca) sisquocensis</i> Reinhart	Subgenus, 28N–5S, through Gulf of California
N.D.	<i>Arca (Arca)</i> sp.	<i>Navicula</i> sp.	Subgenus, 28N–5S, through Gulf of California
N.D.	<i>Arca (Arca)</i> sp.	<i>Arca (Arca</i> s.s.) n.sp. (large)	Subgenus, 28N–5S, through Gulf of California
8–5 Ma	<i>Arca (Arca) terminubonis</i> Grant and Gale	<i>Arca terminubonis</i> Grant and Gale	Subgenus, 28N–5S, through Gulf of California
N.D.	<i>Arca</i> sp.	<i>Arca</i> sp.	Genus, 28N–5S, through Gulf of California
8–5 Ma	<i>Archaeopneustes moorefieldi</i> Hall	<i>Archaeopneustes moorefieldi</i> Hall (Echinodermata)	Genus, West Indies near 23N, 38 m to 599 m
23–13 Ma	<i>Architectonica compressa</i> Wiedey	<i>Architectonica compressa</i> Wiedey	Genus, 25N–5S, through Gulf of California; tideflats to 37 m
13 Ma–H	<i>Architectonica nobilis</i> Bolten	<i>Architectonica nobilis</i> Bolten var. <i>discus</i> Grant and Gale	25N–5S, through Gulf of California; tideflats to 37 m
13 Ma–H	<i>Architectonica nobilis</i> Bolten	<i>Architectonica quadriceps</i> Hinds	25N–5S, through Gulf of California
N.D.	<i>Architectonica</i> sp.	<i>Architectonica</i> sp.	Genus, 25N–5S, through Gulf of California
N.D.	<i>Archohelia</i> sp.	<i>Archohelia</i> sp. (Cnidaria)	Genus not living, Eocene–Miocene
13 Ma–H	<i>Arcinella californica</i> (Dall)	<i>Echinochama californica</i> Dall	28N–6N; 22 to 46 m
13–8 Ma	<i>Arcopsis adamsi conradiana</i> (Dall) (? = <i>Arcopsis solida</i> [Sowerby])	<i>Arcopsis adamsi</i> (Dall)	Species 35N–26N, Atlantic; 45 to 95 m. If <i>A. solida</i> , 33N to 9S; to 5 m
13–8 Ma	<i>Arene stephensoni</i> Schremp	<i>Arene stephensoni</i> Schremp	Genus, 24N and Gulf of California–0; intertidal to 91 m
5–2.5 Ma	<i>Argopecten abieties</i> (Jordan and Hertlein) 5–2.5 Ma	<i>Argopecten abieties</i> (Jordan and Hertlein)	Genus, 34N–6S; 1 m to 135 m; bays, sand or mud, below low tide
5–1 Ma	<i>Argopecten abietis abbotti</i> (Hertlein and Grant) 5–1 Ma	<i>Chlamys (Argopecten) abietis abbotti</i> Hertlein and Grant	Genus, 34N–6S
8–1 Ma	<i>Argopecten callidus</i> (Hertlein) 8–1 Ma	<i>Chlamys (Argopecten) callida</i> Hertlein	Genus, 34N–6S
8–1 Ma	<i>Argopecten callidus</i> (Hertlein) 8–1 Ma	<i>Pecten (Plagiectenium) callidus</i> Hertlein	Genus, 34N–6S
8–1 Ma	<i>Argopecten callidus</i> (Hertlein) 8–1 Ma	<i>Argopecten callidus</i> (Hertlein)	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten cristobalensis</i> (Hertlein) 8–2.5 Ma	<i>Pecten (Plagiectenium) cristobalensis</i> Hertlein	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten cristobalensis</i> (Hertlein) 8–2.5 Ma	<i>Argopecten cristobalensis</i> (Hertlein)	Genus, 34N–6S
13–2.5 Ma	<i>Argopecten deserti</i> (Conrad) 13–2.5 Ma	<i>Pecten (Plagiectenium) deserti</i> Conrad	Genus, 34N–6S
13–2.5 Ma	<i>Argopecten deserti</i> (Conrad) 13–2.5 Ma	<i>Pecten deserti</i> Conrad	Genus, 34N–6S
5–2.5 Ma	<i>Argopecten ericellus</i> (Hertlein) 5–2.5 Ma	<i>Chlamys (Argopecten) ericellus</i> Hertlein	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten hakei</i> (Hertlein) 8–2.5 Ma	<i>Chlamys (Argopecten) hakei</i> Hertlein	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten hakei</i> (Hertlein) 8–2.5 Ma	<i>Argopecten hakei</i> (Hertlein)	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten hakei</i> (Hertlein) 8–2.5 Ma	<i>Pecten (Plagiectenium) hakei</i> Hertlein	Genus, 34N–6S
8–1 Ma	<i>Argopecten invalidus</i> (Hanna) 8–1 Ma	<i>Aequipecten invalidus</i> (Hanna)	Genus, 34N–6S

8–1 Ma	<i>Argopecten invalidus</i> (Hanna) 8–1 Ma	<i>Chlamys</i> (<i>Argopecten</i>) <i>invalida</i> Hanna	Genus, 34N–6S
8–1 Ma	<i>Argopecten invalidus</i> (Hanna) 8–1 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>invalidus</i> G.D. Hanna	Genus, 34N–6S
8–1 Ma	<i>Argopecten invalidus</i> (Hanna) 8–1 Ma	<i>Pecten invalidus</i> Hanna	Genus, 34N–6S
13–1 Ma	<i>Argopecten mendenhalli</i> (Arnold) 13–1 Ma	<i>Argopecten mendenhalli</i> (Arnold)	Genus, 34N–6S
13–1 Ma	<i>Argopecten mendenhalli</i> (Arnold) 13–1 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>mendenhalli</i> Arnold	Genus, 34N–6S
13–1 Ma	<i>Argopecten mendenhalli</i> (Arnold) 13–1 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>cerrosensis</i> var. <i>mendenhalli</i> Arnold	Genus, 34N–6S
13–1 Ma	<i>Argopecten mendenhalli</i> (Arnold) 13–1 Ma	<i>Pecten mendenhalli</i> Arnold	Genus, 34N–6S
13–1 Ma	<i>Argopecten mendenhalli</i> (Arnold) 13–1 Ma	<i>Pecten</i> sp. nov. aff. <i>P. mendenhalli</i> Arnold	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten percarus</i> (Hertlein) 8–2.5 Ma	<i>Argopecten percarus</i> (Hertlein)	Genus, 34N–6S
8–2.5 Ma	<i>Argopecten percarus</i> (Hertlein) 8–2.5 Ma	<i>Pecten</i> (<i>Aequipecten</i>) <i>percarus</i> Hertlein	Genus, 34N–6S
5 Ma–H	<i>Argopecten purpuratus</i> (Lamarck) 5 Ma–Holocene	<i>Pecten purpuratus</i> Lamarck	30N–6S
N.D.	<i>Argopecten</i> sp.	<i>Aequipecten</i> sp.	Genus, 34N–6S
N.D.	<i>Argopecten</i> sp.	<i>Argopecten</i> sp.	Genus, 34N–6S
23? or 8–1.6 Ma	<i>Argopecten subdolos</i> (Hertlein) 23?, or 8 or 6 Ma to 1.6 Ma	<i>Argopecten subdolos</i> (Hertlein)	Genus, 34N–6S
23? or 8–1.6 Ma	<i>Argopecten subdolos</i> (Hertlein) 23?, or 8 or 6 Ma to 1.6 Ma	<i>Chlamys</i> (<i>Argopecten</i>) <i>subdola</i> Hertlein	Genus, 34N–6S
23? or 8–1.6 Ma	<i>Argopecten subdolos</i> (Hertlein) 23?, or 8 or 6 Ma to 1.6 Ma	<i>Chlamys</i> (<i>Chlamys</i>) <i>subdola</i> Hertlein	Genus, 34N–6S
23? or 8–1.6 Ma	<i>Argopecten subdolos</i> (Hertlein) 23?, or 8 or 6 Ma to 1.6 Ma	<i>Pecten</i> (<i>Argopecten</i>) <i>subdolos</i> Hertlein	Genus, 34N–6S
23? or 8–1.6 Ma	<i>Argopecten subdolos</i> (Hertlein) 23?, or 8 or 6 Ma to 1.6 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>subdolos</i> Hertlein	Genus, 34N–6S
13–8 Ma	<i>Argopecten sverdrupi</i> (Durham) 13–8 Ma	<i>Aequipecten sverdrupi</i> Durham	Genus, 34N–6S
13–8 Ma	<i>Argopecten sverdrupi</i> (Durham) 13–8 Ma	<i>Argopecten sverdrupi</i> (Durham)	Genus, 34N–6S
8 Ma–H	<i>Argopecten ventricosus</i> (Sowerby) 8 Ma–Holocene	<i>Aequipecten circularis</i> (Sowerby)	34.4N–5.1S; 1 to 55 or 135 m
8 Ma–H	<i>Argopecten ventricosus</i> (Sowerby) 8 Ma–Holocene	<i>Chlamys</i> (<i>Argopecten</i>) <i>circularis</i> Sowerby	34.4N–5.1S; 1 to 55 or 135 m
8 Ma–H	<i>Argopecten ventricosus</i> (Sowerby) 8 Ma–Holocene	<i>Pecten</i> (<i>Plagioctenium</i>) <i>circularis</i> Sowerby	34.4N–5.1S; 1 to 55 or 135 m
8 Ma–H	<i>Argopecten ventricosus</i> (Sowerby) 8 Ma–Holocene	<i>Pecten circularis</i> Sowerby	34.4N–5.1S; 1 to 55 or 135 m
13? or 5–2.5? Ma	<i>Argopecten ventricosus bramkampii</i> (Durham) 13?–2.5? Ma	<i>Aequipecten circularis bramkampii</i> Durham	Species, 34.4N–5.8S; 1 to 55 or 135 m
8–2.5 Ma	<i>Argopecten ventricosus calli</i> (Hertlein) 8–2.5 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>calli</i> Hertlein	Species, 34.4N–5.8S; 1 to 55 or 135 m
8–2.5 Ma	<i>Argopecten ventricosus calli</i> (Hertlein) 8–2.5 Ma	<i>Argopecten calli</i> (Hertlein)	Species, 34.4N–5.8S; 1 to 55 or 135 m
8–2.5 Ma	<i>Argopecten ventricosus calli</i> (Hertlein) 8–2.5 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>calli</i> Hertlein	Species, 34.4N–5.8S; 1 to 55 or 135 m
5–2.5 Ma	<i>Argopecten ventricosus eldridgei</i> (Arnold) 5–2.5 Ma	<i>Pecten eldridgei</i> Arnold	Species, 34.4N–5.8S; 1 to 55 or 135 m
5–2.5 Ma	<i>Argopecten ventricosus eldridgei</i> (Arnold) 5–2.5 Ma	<i>Aequipecten circularis eldridgei</i> (Arnold)	Species, 34.4N–5.8S; 1 to 55 or 135 m
8–2.5 Ma	<i>Argopecten ventricosus impostor</i> (Hanna) 8–2.5 Ma	<i>Aequipecten circularis impostor</i> (Hanna)	Species, 34.4N–5.8S; 1 to 55 or 135 m
8–2.5 Ma	<i>Argopecten ventricosus impostor</i> (Hanna) 8–2.5 Ma	<i>Aequipecten impostor</i> (Hanna)	Species, 34.4N–5.8S; 1 to 55 or 135 m
8–2.5 Ma	<i>Argopecten ventricosus impostor</i> (Hanna) 8–2.5 Ma	<i>Argopecten circularis impostor</i> (Hanna)	Species, 34.4N–5.8S; 1 to 55 or 135 m
13–8 Ma	<i>Argopecten?</i> <i>crassiradiatus</i> (Clark) 13–8 Ma	<i>Pecten crassiradiatus</i> Clark	Genus, 34N–6S
N.D.	<i>Astarte</i> sp.	<i>Astarte</i> sp.	Genus, 71N–48N; 18 to 229 m
13–8 Ma	<i>Asterias remondii</i> Gabb	<i>Asterias remondii</i> Gabb	Generic assignment unreliable
27? or 17–2.5 Ma	<i>Astraea</i> (<i>Pomaulax</i>) <i>biangulata</i> (Gabb)	<i>Architectonica</i> sp.	Subgenus, 34N–10N; genus, intertidal to 73 m, on rocks

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Astraea (Pachypoma?) biangulata</i> (Gabb)	Subgenus, 34N–10N
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	Subgenus, 34N–10N
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Astraea biangulata</i> (Gabb)	Subgenus, 34N–10N
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Astraea raymondi</i> (Clark)	Subgenus, 34N–10N
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Astralium raymondi</i> Clark	Subgenus, 34N–10N
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Calliostoma obliquistriata</i> Trask	Subgenus, 34N–10N
27? or 17–2.5 Ma	<i>Astraea (Pomaulax) biangulata</i> (Gabb)	<i>Calliostoma obliquistriata</i> Trask	Subgenus, 34N–10N
13? or 8–2.5 Ma	<i>Astraea (Pomaulax) cf. A. (P.) gradata</i> Grant and Gale	<i>Astraea cf. A. (Pomaulax) gradata</i> Grant and Gale	Subgenus, 34N–10N
13? or 8–2.5 Ma	<i>Astraea (Pomaulax) gradata</i> Grant and Gale	<i>Astraea (Pomaulax) gradata</i> Grant and Gale	Subgenus, 34N–10N
13? or 8–2.5 Ma	<i>Astraea (Pomaulax) gradata</i> Grant and Gale	<i>Pomaulax gradatus</i> (Grant and Gale)	Subgenus, 34N–10N
27–17 Ma	<i>Astraea (Pomaulax) morani</i> Loel and Corey	<i>Astraea morani</i> Loel and Corey	Subgenus, 34N–10N
N.D.	<i>Astraea (Pomaulax) n.sp.</i> Addicott	<i>Astraea (Pomaulax) n.sp.</i> Addicott	Subgenus, 34N–10N
N.D.	<i>Astraea (Pomaulax) sp.</i>	<i>Astraea n.sp.?</i>	Subgenus, 34N–10N
5 Ma–H	<i>Astraea (Pomaulax) undosa</i> (Wood)	<i>Astraea undosa</i> (Wood)	34N–28N; intertidal to 80 m, on rocks
8–5 Ma	<i>Astraea arnoldi</i> (Nomland)	<i>Astralium arnoldi</i> Nomland	Genus, 48N–10N
8 Ma–H	<i>Astraea cf. A. inaequalis</i> (Martyn)	<i>Pachypoma cf. P. precursor</i> Dall	48N–33N
5 Ma–H	<i>Astraea gibberosa</i> (Dillwyn)	<i>Pachypoma cf. P. gibberosum</i> (Dillwyn)	50N–25N; rocky substrate, to 25 m
8 Ma–H	<i>Astraea inaequalis</i> (Martyn)	<i>Astraea inaequalis</i> (Martyn)	48N–33N
N.D.	<i>Astraea sp.</i>	<i>Astraea sp.</i>	Genus, 48N–10N
N.D.	<i>Astraea sp.</i>	<i>Astralium sp.</i>	Genus, 48N–10N
5–2.5 Ma	<i>Astrangia (Astrangia) lajollaensis</i> Durham (Cridaria)	<i>Astrangia insignifica</i> Nomland (Cridaria)	Genus, 34N–25N
5–2.5 Ma	<i>Astrangia (Astrangia) lajollaensis</i> Durham	<i>Astrangia coalingensis</i> Vaughan	Genus, 34N–25N
N.D.	<i>Astrangia sp.</i>	<i>Astrangia sp.</i>	Genus, 34N–3N, through Gulf of California
13–8 Ma	<i>Astrodapsis antiselli</i> Conrad (Echinodermata)	<i>Astrodapsis altus</i> Kew (Echinodermata)	Genus not living
13–8 Ma	<i>Astrodapsis antiselli</i> Conrad	<i>Astrodapsis antiselli</i> Conrad	Genus not living
13–8 Ma	<i>Astrodapsis antiselli</i> Conrad	<i>Astrodapsis margaritanus</i> Kew	Genus not living
13–8 Ma	<i>Astrodapsis antiselli</i> Conrad	<i>Astrodapsis tumidus</i> Rémond	Genus not living
13–8 Ma	<i>Astrodapsis antiselli</i> Conrad	<i>Astrodapsis tumidus</i> Rémond (large variety)	Genus not living
8–5 or 2.5? Ma	<i>Astrodapsis arnoldi</i> Pack	<i>Astrodapsis crassus</i> Kew	Genus not living
8–5 or 2.5? Ma	<i>Astrodapsis arnoldi</i> Pack	<i>Astrodapsis arnoldi</i> Pack	Genus not living
23? or 17–8 Ma	<i>Astrodapsis brewerianus</i> (Rémond)	<i>Astrodapsis hootsi</i> Grant and Eaton (Eaton et al., 1941, Pl. V, Fig. 11a)	Genus not living
23? or 17–8 Ma	<i>Astrodapsis brewerianus</i> (Rémond)	<i>Astrodapsis brewerianus</i> (Rémond)	Genus not living
13–8 Ma	<i>Astrodapsis cierboensis</i> Kew	<i>Astrodapsis cierboensis</i> Kew	Genus not living
13–8 Ma	<i>Astrodapsis cierboensis</i> Kew	<i>Astrodapsis tumidus cierboensis</i> Kew	Genus not living
13–8 Ma	<i>Astrodapsis cierboensis</i> Kew	<i>Astrodapsis tumidus</i> subsp. <i>cierboensis</i> Kew	Genus not living
17? or 13–8 Ma	<i>Astrodapsis cierboensis</i> Kew (juvenile)	<i>Astrodapsis hootsi</i> Grant and Eaton (Eaton et al., 1941, Pl. V, Fig. 11b)	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davisii</i> Grant and Eaton	<i>Astrodapsis clarki</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davisii</i> Grant and Eaton	<i>Astrodapsis davisii</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davisii</i> Grant and Eaton	<i>Astrodapsis desaixi</i> Grant and Eaton	Genus not living

17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis englishi</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis goudkoffi</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis gregeri</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis gregeri</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis gregeri</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis isabellae</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis johnsoni</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis johnsoni similis</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis major</i> Grant and Eaton	Genus not living
17? or 13–8 Ma	<i>Astrodapsis davis</i> Grant and Eaton	<i>Astrodapsis quaylei</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis altus antiquus</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis armstrongi</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis auguri</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis brewerianus bitterensis</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis brewerianus diabloensis</i> Kew	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis brewerianus emergens</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis brewerianus junior</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis cierboensis branchensis</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis diabloensis</i> Kew	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis diabloensis superior</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis galei</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis ovalis</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis reedi</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis schucherti affinis</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis diabloensis</i> Kew	<i>Astrodapsis schucherti</i> Grant and Eaton	Genus not living
13? or 8–5 Ma	<i>Astrodapsis fernandoensis</i> Pack	<i>Astrodapsis fernandoensis</i> Pack	Genus not living
13? or 8–5 Ma	<i>Astrodapsis jacalitosensis</i> Arnold	<i>Astrodapsis jacalitosensis</i> Arnold	Genus not living
13? or 8–5 Ma	<i>Astrodapsis jacalitosensis</i> Arnold?	<i>Astrodapsis schencki mirandaensis</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis pabloensis</i> (Kew)	<i>Astrodapsis cutleri</i> Grant and Eaton	Genus not living
13–8 Ma	<i>Astrodapsis pabloensis</i> (Kew)	<i>Astrodapsis pabloensis</i> (Kew)	Genus not living
13–8 Ma	<i>Astrodapsis pabloensis</i> (Kew)	<i>Astrodapsis elevatum</i> Grant and Eaton	Genus not living
8–5 Ma	<i>Astrodapsis peltoides</i> Anderson and Martin	<i>Astrodapsis peltoides</i> Anderson and Martin	Genus not living
13? or 8–5 Ma	<i>Astrodapsis spatiosus</i> Kew	<i>Astrodapsis salinasensis</i> Richards	Genus not living
13? or 8–5 Ma	<i>Astrodapsis spatiosus</i> Kew	<i>Astrodapsis spatiosus</i> Kew	Genus not living
13? or 8–5 Ma	<i>Astrodapsis spatiosus?</i> Kew	<i>Astrodapsis scutelliformis</i> Kew	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis californicus</i> Kew	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis coalingaensis grandis</i> Kew	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis coalingaensis</i> Kew	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis cuyamanus</i> Kew	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis grandis</i> Kew	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis hertleini</i> Grant and Eaton	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis laimongi</i> Grant and Eaton	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis perrini</i> Grant and Eaton	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis whitneyi</i> Rémond	Genus not living
13–8 or 5? Ma	<i>Astrodapsis whitneyi</i> Rémond	<i>Astrodapsis woodringi</i> Grant and Eaton	Genus not living
5 Ma–H	<i>Astropecten armatus</i> Gray (Echinodermata)	<i>Astropecten armatus</i> Gray (Echinodermata)	33N–3S
8 Ma–H	<i>Astyris gausapata</i> (Gould)	<i>Mitrella gausapata</i> (Gould)	60N–27N
8 Ma–H	<i>Astyris gausapata</i> (Gould)	<i>Mitrella carinata</i> (Hinds) var. <i>gausapata</i> (Gould)	60N–27N
8 Ma–H	<i>Astyris gausapata</i> (Gould)	<i>Mitrella carinata gausapata</i> (Gould)	60N–27N
8 Ma–H	<i>Astyris gausapata</i> (Gould) (McLean, 1996)	<i>Astyris gausapata</i> Gould	60–27N
27–8 Ma	<i>Atrina alamedensis</i> (Yates)	<i>Pinna alamedensis</i> Yates	Genus, 34N–5S; to 125 m, offshore mudflats
27–8 Ma	<i>Atrina alamedensis</i> (Yates)	<i>Atrina alamedensis</i> (Yates)	Genus, 34N–5S
13–8 Ma	<i>Atrina bicuniata</i> (Nomland)	<i>Pinna bicuneata</i> Nomland	Genus, 34N–5S
N.D.	<i>Atrina</i> sp.	<i>Pinna</i> (<i>Atrina</i>) sp.	Genus, 34N–5S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13–8 Ma	<i>Atrina stephensoni</i> Hanna	<i>Atrina stephensi</i> Hanna	Genus, 34N–5S
23–17 Ma	<i>Aturia angustata</i> (Conrad)	<i>Aturia angustata</i> (Conrad)	Genus not living, Paleocene–Miocene
5 Ma–H	<i>Axinopsida serricata</i> Carpenter	<i>Axinopsida serricata</i> Carpenter	71.4N–28N, in Gulf of California; intertidal to 275 m
N.D.	<i>Axinopsida?</i> sp.	<i>Axinopsis?</i> sp.	Genus, 71.4N–28N; intertidal to 549 m
5 Ma–H	<i>Balanophyllia elegans</i> Verrill (Cnidaria)	<i>Balanophyllia elegans</i> Verrill (Cnidaria)	48N–34N; to 170 m
5–2.5 Ma	<i>Balanus</i> cf. <i>B. aquilia</i> Pilsbry (Arthropoda)	<i>Balanus</i> cf. <i>B. aquilia</i> Pilsbry (Arthropoda)	37N–32N; intertidal to 18 m
17–13 Ma	<i>Balanus</i> cf. <i>B. gregarius</i> (Conrad)	<i>Balanus</i> cf. <i>B. estrellanus</i> Arnold	Not living
13–2.5 Ma	<i>Balanus</i> cf. <i>B. gregarius</i> (Conrad)	<i>Balanus</i> (<i>Tamiosoma</i>) cf. <i>B. (T.) gregarius</i> (Conrad)	Not living
8 Ma–H	<i>Balanus</i> cf. <i>B. nubulis</i> Darwin	<i>Balanus</i> cf. <i>B. nubulis</i> Darwin	55N–30N
13 Ma–H	<i>Balanus concavus</i> Bronn	<i>Balanus concavus</i> Bronn	Worldwide distribution
8–5 Ma	<i>Balanus coosensis</i> Dall (Newman and Ross, 1976)	<i>Balanus</i> cf. <i>B. tintinnabulum</i> var. <i>coosensis</i> Dall	Not living
17–2.5 Ma	<i>Balanus gregarius</i> (Conrad)	<i>Balanus</i> (<i>Balanus</i>) <i>gregarius</i> (Conrad)	Not living
17–2.5 Ma	<i>Balanus gregarius</i> (Conrad)	<i>Balanus gregarius</i> (Conrad)	Not living
17–2.5 Ma	<i>Balanus gregarius</i> (Conrad)	<i>Tamiosoma gregaria</i> Conrad	Not living
8–5 Ma	<i>Balcis</i> aff. <i>B. rutila</i> (Carpenter)	<i>Eulima</i> aff. <i>E. rutila</i> Carpenter	55N–25N
5 Ma–H	<i>Balcis</i> cf. <i>B. micans</i> (Carpenter)	<i>Balcis</i> cf. <i>B. micans</i> (Carpenter)	48N–27N
17 Ma–H	<i>Balcis</i> cf. <i>B. oldroydi</i> Bartsch	<i>Balcis</i> cf. <i>B. oldroydi</i> Bartsch	56N–3S; intertidal to 229 m
17–13 Ma	<i>Balcis conchita</i> Keen	<i>Balcis conchita</i> Keen	Genus, 56N–3S
17–13 Ma	<i>Balcis lutzi</i> Addicott	<i>Balcis lutzi</i> Addicott	Genus, 56N–3S
17–13 Ma	<i>Balcis petrolia</i> Addicott	<i>Balcis petrolia</i> Addicott	Genus, 56N–3S
8 Ma–H	<i>Balcis rutila</i> (Carpenter)	<i>Melanella</i> (<i>Eulima</i>) <i>rutila</i> Carpenter	55N–25N
8 Ma–H	<i>Balcis rutila</i> (Carpenter)	<i>Balcis rutila</i> (Carpenter)	55N–25N
5 Ma–H	<i>Balcis thersites</i> (Carpenter)	<i>Balcis thersites</i> (Carpenter)	37N–30N
8? Ma–H	<i>Bankia</i> cf. <i>B. setacea</i> (Tryon)	<i>Bankia</i> cf. <i>B. setacea</i> (Tryon)	57.5N–32.7N; intertidal to 90 m, boring into wood
8? Ma–H	<i>Barbatia</i> (Acar) cf. <i>B. (Acar) bailyi</i> (Bartsch)	<i>Barbatia</i> cf. <i>B. bailyi</i> (Bartsch)	35.5N–7.8N; intertidal to 5 m
N.D.	<i>Barbatia</i> (<i>Calloarca</i>) n.sp. Powell	<i>Barbatia</i> (<i>Calloarca</i>) n.sp. Powell	Genus, 35.5N–5S, Gulf of California; intertidal to 120 m
5 Ma–H	<i>Barbatia</i> (<i>Fugleria</i>) <i>illota</i> Sowerby	<i>Barbatia</i> (<i>Fugleria</i>) <i>illota</i> Sowerby	29N–5S, through Gulf of California; intertidal to 70 m
8–2.5 Ma	<i>Barbatia</i> (<i>Fugleria</i>) <i>pseudoillota</i> Reinhart	<i>Barbatia pseudoillota</i> Reinhart	Genus, 35.5N–5S, and Gulf of California
N.D.	<i>Barbatia</i> sp.	<i>Arca</i> (<i>Barbatia</i>) sp.	Genus, 35.5N–5S, and Gulf of California
5 Ma–H	<i>Barleeia marmorea</i> (Carpenter)	<i>Diala</i> cf. <i>D. marmorea</i> Carpenter	48N–25N; genus, intertidal to 46 m
17? Ma–H	<i>Barleeia?</i> cf. <i>B. orcutti</i> Bartsch	<i>Barleeia?</i> cf. <i>B. orcutti</i> Bartsch	25N–23N
5 Ma–H	<i>Basterotia</i> (<i>Basterotella</i>) <i>hertleini</i> Durham	<i>Basterotia</i> (<i>Basterotella</i>) <i>hertleini</i> Durham	24N–1S; genus, intertidal to 13 m
5 Ma–H	<i>Bathybembix</i> (<i>Bathybembix</i>) <i>bairdii</i> (Dall)	<i>Turricula</i> cf. <i>T. bairdii</i> Dall	55N–15N; genus, 55 to 1460 m
23–13 Ma	<i>Batillaria ocoyana</i> (Anderson and Martin)	<i>Batillaria ocoyana</i> (Anderson and Martin)	Genus, equator, salt tide pool, mangrove swamp
23–13 Ma	<i>Batillaria ocoyana</i> (Anderson and Martin)	<i>Clathrodrillia ocoyana</i> (Anderson and Martin)	Genus, equator, salt tide pool, mangrove swamp
23–13 Ma	<i>Batillaria ocoyana</i> (Anderson and Martin)	<i>Drillia ocoyana</i> Anderson and Martin	Genus, equator, salt tide pool, mangrove swamp
13–8 Ma	bernardinid? <i>indet.</i>	<i>Bernardina?</i> sp.	Genus, 36.6N–27.9N; intertidal to 46 m
13 Ma–H	<i>Bittium</i> (<i>Lirobittium</i>) <i>asperum</i> (Gabb)	<i>Bittium</i> (<i>Lirobittium</i>) <i>asperum</i> (Gabb)	34N–27N
13 Ma–H	<i>Bittium</i> (<i>Lirobittium</i>) <i>asperum</i> (Gabb)	<i>Bittium asperum</i> (Gabb)	34N–27N
13 Ma–H	<i>Bittium</i> (<i>Lirobittium</i>) <i>asperum</i> (Gabb)	<i>Bittium</i> (<i>Lirobittium</i>) <i>asperum</i> Gabb	34N–27N
5 Ma–H	<i>Bittium</i> (<i>Semibittium</i>) <i>quadrifilatum</i> Carpenter	<i>Bittium</i> (<i>Semibittium</i>) <i>quadrifilatum</i> Carpenter	34N–27N
8? or 5 Ma–H	<i>Bittium</i> (<i>Semibittium</i>) <i>rugatum</i> Carpenter	<i>Bittium rugatum</i> Carpenter	34N–27N
5 Ma–H	<i>Bittium</i> (<i>Stylidium</i>) <i>eschrichtii</i> (Middenforff)	<i>Bittium filiosum</i> Gould	57N–48N
13? or 8–2.5 Ma	<i>Bittium arnoldi</i> Bartsch	<i>Bittium casmaliense arnoldi</i> Bartsch	Genus, 60N–23N; intertidal to 659 m; sublittoral under kelp

13–8 Ma	<i>Bittium bolingerensis</i> (Clark)	<i>Cerithiopsis bolingerensis</i> Clark	Genus, 60N–23N
8–2.5 Ma	<i>Bittium casmaliense</i> Bartsch	<i>Bittium casmaliense</i> Bartsch	Genus, 60N–23N
8? Ma–H	<i>Bittium</i> cf. <i>B. multifilum</i> Bartsch	<i>Bittium</i> cf. <i>B. attenuatum multifilum</i> Bartsch	37N–34N
8? Ma–H	<i>Bittium</i> cf. <i>B. vancouverense</i> Dall and Bartsch	<i>Bittium</i> cf. <i>B. vancouverense</i> Dall and Bartsch	60N–48N
5–2.5 Ma	<i>Bittium frankeli</i> Faustman	<i>Bittium frankelum</i> Faustman	Genus, 60N–23N
N.D.	<i>Bittium</i> sp.	<i>Bittium</i> sp.	Genus, 60N–23N
27–8 Ma	<i>Bittium topangensis</i> (Arnold)	<i>Bittium topangensis</i> (Arnold)	Genus, 60N–23N
27–8 Ma	<i>Bittium topangensis</i> (Arnold)	<i>Cerithiopsis tumeri</i> Clark	Genus, 60N–23N
27–8 Ma	<i>Bittium topangensis</i> (Arnold)	<i>Cerithium arnoldi</i> Anderson and Martin	Genus, 60N–23N
27–8 Ma	<i>Bittium topangensis</i> (Arnold)	<i>Cerithium topangensis</i> Arnold	Genus, 60N–23N
13–8 Ma	<i>Bittium trampasensis</i> Clark	<i>Bittium trampasensis</i> Clark	Genus, 60N–23N
13–8 Ma	<i>Bittium?</i> <i>pabloensis</i> Clark	<i>Bittium?</i> <i>pabloensis</i> Clark	Genus, 60N–23N
8–5 Ma	<i>Boetica hertleini</i> Kanakoff	<i>Boetica hertleini</i> Kanakoff	Genus, 34N–33N
5 Ma–H	<i>Boreotrophon</i> cf. <i>B. rotundatus</i> Dall (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon</i> cf. <i>B. rotundatus</i> Dall	57N
8 Ma–H	<i>Boreotrophon</i> cf. <i>B. sturati</i> (Smith) (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon</i> cf. <i>B. sturati</i> (Smith)	55N–33N
5 Ma–H	<i>Boreotrophon clathratus scalariformis</i> (Linnaeus) (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon clathratus scalariformis</i> (Linnaeus)	57N–33N (?)
5–2.5 Ma	<i>Boreotrophon durhami</i> Faustman (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon durhami</i> Faustman	Genus, 72N–17N
5 Ma–H	<i>Boreotrophon eucymata</i> Dall (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon eucymata</i> Dall	33N
8 Ma–H	<i>Boreotrophon multicostatus</i> (Eschscholtz) (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon multicostatus</i> (Eschscholtz)	60N–33N
8 Ma–H	<i>Boreotrophon multicostatus</i> (Eschscholtz) (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Trophon multicostata</i> (Eschscholtz)	60N–33N
5–2.5 Ma	<i>Boreotrophon raymondi</i> Moody (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon raymondi</i> Moody	Genus, 72N–17N
5–2.5 Ma	<i>Boreotrophon raymondi</i> Moody (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Trophon</i> [Boreotrophon] <i>raymondi</i> Dall	Genus, 72N–17N
N.D.	<i>Boreotrophon</i> sp. (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon</i> sp.	Genus, 72N–17N
N.D.	<i>Boreotrophon</i> sp. (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon</i> sp. (or <i>Trophon</i> [Boreotrophon] sp.)	Genus, 72N–17N
13–8 Ma	<i>Boreotrophon stuarti cierboensis</i> Grant and Eaton (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon stuarti cierboensis</i> Grant and Eaton	Species, 55N–33N
5–2.5 Ma	<i>Boreotrophon stuarti praecursor</i> (Arnold) (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Boreotrophon stuarti praecursor</i> (Arnold)	Species, 55N–33N
5 Ma–H	<i>Boreotrophon stuarti</i> Smith (or <i>Trophon</i> [Boreotrophon] . . .)	<i>Trophon</i> [Boreotrophon] <i>stuarti</i> E. A. Smith	55N–33N
5–2.5 Ma	<i>Bornia</i> (<i>Temblornia</i>) <i>frankiana</i> Hertlein and Grant	<i>Bornia</i> (<i>Temblornia</i>) <i>frankiana</i> Hertlein	Genus, 24N–6S; 18 to 37 m
23–13 Ma	<i>Bornia</i> (<i>Temblornia</i>) <i>triangulata</i> (Anderson and Martin)	<i>Bornia</i> (<i>Temblornia</i>) <i>triangulata</i> (Anderson and Martin)	Genus, 24N–6S
23–13 Ma	<i>Bornia</i> (<i>Temblornia</i>) <i>triangulata</i> (Anderson and Martin)	<i>Donax</i> (?) <i>triangulata</i> Anderson and Martin	Genus, 24N–6S
23–13 Ma	<i>Bornia</i> (<i>Temblornia</i>) <i>triangulata</i> (Anderson and Martin)	<i>Donax triangulata</i> Anderson and Martin	Genus, 24N–6S
N.D.	<i>Bornia</i> sp.	<i>Donax</i> n.sp.	Genus, 24N–6S
N.D.	<i>Botula?</i> sp.	<i>Botula?</i> sp.	Genus, 23N–1S
5 Ma–H	<i>Brachidontes</i> (<i>Aeidimytilus</i>) <i>adamsianus</i> (Dunker)	<i>Aeidimytilus adamsianus</i> Dunker	34N–1S; intertidal on rocky shores
13–8 Ma	<i>Brachidontes</i> (<i>Aeidimytilus</i>) <i>gabbi</i> (Clark)	<i>VolSELLa gabbi</i> (Clark)	Genus, 34N–5S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13–8 Ma	<i>Brachidontes (Aeidimylus) gabbi</i> (Clark)	<i>Modiolus gabbi</i> Clark	Genus, 34N–5S
13–8 Ma	<i>Brachidontes (Scolimylus?) subconvexus</i> (Trask)	<i>Modiolus gabbi subconvexus</i> Trask	Genus, 34N–5S
N.D.	<i>Brachidontes</i> sp.	<i>Brachiodontes</i> n.sp.	Genus, 34N–5S
13–8 Ma	<i>Brachidontes? (Scolimylus?) margaritana</i> (Nomland)	<i>Septifer margaritana</i> Nomland	Genus, 34N–5S; intertidal to 31 m
17 Ma–H 5–2.5 Ma	<i>Branchiolambrus altus</i> Rathbun (Arthropoda) <i>Brisaster towsendi woynari</i> Hertlein and Grant	<i>Branchiolambrus altus</i> Rathbun (Arthropoda) <i>Brisaster towsendi woynari</i> Hertlein and Grant	Intertidal Species, 37N–8N
5 Ma–H	<i>Brissopsis pacifica</i> (A. Agassiz)?	<i>Brissopsis pacifica</i> (A. Agassiz)? (Echinodermata)	34N–8N
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Agasoma barkerianum</i> Cooper <i>santacruz anum</i> Arnold	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Agasoma gravidum</i> Gabb	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Bruclarkia barkeriana</i> forma <i>santacruzana</i> (Arnold)	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Bruclarkia barkerianum</i> (Cooper)	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Bruclarkia barkerianum</i> (Cooper)	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Bruclarkia barkerianum</i> (Cooper) <i>santacruz anum</i> (Arnold)	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Bruclarkia geniculata</i> (Conrad)	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Bruclarkia barkeriana</i> (Cooper)	Genus not living
27–13 Ma	<i>Bruclarkia barkeriana</i> (Cooper)	<i>Agasoma barkerianum</i> Cooper	Genus not living
27–17 Ma	<i>Bruclarkia barkeriana</i> (Cooper) <i>santacruzana</i> (Arnold)	<i>Bruclarkia barkerianum</i> (Cooper) <i>santacruz anum</i> (Arnold)	Genus not living
27–17 Ma	<i>Bruclarkia barkeriana</i> (Cooper) <i>santacruzana</i> (Arnold)	<i>Bruclarkia barkerianum sanctacruz anum</i> (Arnold)	Genus not living
27–17 Ma	<i>Bruclarkia barkeriana</i> (Cooper) <i>santacruzana</i> (Arnold)	<i>Agasoma sanctacruzana</i> Arnold	Genus not living
27–17 Ma	<i>Bruclarkia barkeriana</i> (Cooper) <i>santacruzana</i> (Arnold)	<i>Agosoma sanctacruz anum</i> Arnold	Genus not living
27–13 Ma	<i>Bruclarkia oregonensis</i> (Conrad)	<i>Agasoma andersoni</i> Wiedey	Genus not living
27–13 Ma	<i>Bruclarkia oregonensis</i> (Conrad)	<i>Agasoma oregonense</i> Anderson and Martin	Genus not living
27–13 Ma	<i>Bruclarkia oregonensis</i> (Conrad)	<i>Bruclarkia oregonense</i> (Conrad)	Genus not living
27–13 Ma	<i>Bruclarkia oregonensis</i> (Conrad)	<i>Bruclarkia oregonensis</i> (Conrad)	Genus not living
27–13 Ma	<i>Bruclarkia oregonensis</i> (Conrad)	<i>Bruclarkia oregonensis</i> (Conrad) <i>yaquin anum</i> (Anderson and Martin)	Genus not living
N.D.	<i>Bruclarkia</i> sp.	<i>Bruclarkia</i> sp.	Genus not living
27–23 Ma	<i>Bruclarkia yaquinana</i> (Anderson and Martin)	<i>Bruclarkia yaquinana</i> (Anderson and Martin)	Genus not living
N.D.	<i>Buccinum</i> sp.?	<i>Buccinum?</i> sp.	Genus, 72N–29N; 9 to 2928 m
5 Ma–H	<i>Buccinum strigillatum</i> Dall	<i>Buccinum strigillatum</i> Dall	48N–29N
5 Ma–H	<i>Bulla (Bulla) gouldiana</i> Pilsbry	<i>Bulla gouldiana</i> Pilsbry	34N–3S, through Gulf of California, intertidal, in bays
17–8 Ma	<i>Bulla cantuanensis</i> Anderson and Martin	<i>Bulla cantuanensis</i> Anderson and Martin	Genus, 34N–5S, through Gulf of California; intertidal to 46 m
13 Ma–H	<i>Bulla punctulata</i> Adams in Sowerby	<i>Bulla punctulata</i> Adams in Sowerby	25N–5S, through Gulf of California; offshore beyond limit of low tide
N.D.	<i>Bulla</i> sp.	<i>Bullaria</i> n.sp.?	Genus, 34N–5S, through Gulf of California
N.D.	<i>Bulla</i> sp.	<i>Bulla</i> sp.	Genus, 34N–5S, through Gulf of California
13 Ma–H	<i>Bulla striata</i> (Bruguière)	<i>Bulla striatus</i> Bruguière	28N, Florida, Clearwater Harbor
13 Ma–H	<i>Bulla striata</i> (Bruguière)	<i>Bullaria striata</i> Bruguière	28N, Florida

N.D. 13 Ma–H	<i>Bullina</i> sp. <i>Bursa californica</i> (Hinds)	<i>Bullina</i> sp. <i>Ranella californica</i> Hinds	Genus, Indo-Pacific 37N–28N; gravel pockets between rocks, and sandy substrate Genus, 56N–1S; 11 to 1464 m
17–13 Ma	<i>Cadulus</i> (<i>Platyschides</i> ?) <i>addicotti</i> Emerson (Scaphopoda)	<i>Cadulus</i> (<i>Platyschides</i> ?) <i>addicotti</i> Emerson (Emerson, 1957, p. 990)	56N–1S; genus, 11 to 1464 m 37N–23N
8 Ma–H 5 Ma–H 5–2.5 Ma 13? or 8–5 or 2.5? Ma 13? or 8–5 or 2.5? Ma 13? or 8–5 or 2.5? Ma	<i>Cadulus</i> cf. <i>C. californicus</i> Pilsbry and Sharp <i>Cadulus fusiformis</i> Pilsbry and Sharp <i>Caecum californicum</i> Dall <i>Calicantharus angulatus</i> (Arnold) <i>Calicantharus angulatus</i> (Arnold) <i>Calicantharus angulatus</i> (Arnold)	<i>Cadulus</i> cf. <i>C. californicus</i> Pilsbry and Sharp <i>Cadulus fusiformis</i> Pilsbry and Sharp <i>Caecum californicum</i> Dall <i>Calicantharus fortis angulatus</i> (Arnold) <i>Calicantharus fortis</i> (Carpenter) <i>angulatus</i> (Arnold) <i>Pisania fortis</i> Carpenter <i>angulata</i> Arnold	Genus, 23N–5N; intertidal to 64 m, among rocks Genus not living. <i>Cantharus</i> , intertidally to offshore, on rocks Genus not living
23–17 Ma 8–1.6 Ma 8–1.6 Ma 8–2.5 Ma 8–2.5 Ma 8–2.5 Ma 27? or 23–13 Ma 27? or 23–13 Ma 27? or 23–13 Ma 27? or 23–13 Ma 27? or 23–13 Ma 27? or 23–13 Ma	<i>Calicantharus carlsoni</i> (Anderson and Martin) <i>Calicantharus fortis</i> (Carpenter) <i>Calicantharus fortis</i> (Carpenter)? <i>Calicantharus humerosus</i> (Gabb) <i>Calicantharus humerosus</i> (Gabb) <i>Calicantharus humerosus</i> (Gabb) <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Calicantharus kernensis</i> (Anderson and Martin)	<i>Searlesia</i> ? <i>carlsoni</i> (Anderson and Martin) <i>Calicantharus fortis</i> (Carpenter) <i>Cantharus fortis</i> (Carpenter) (?) <i>Calicantharus humerosus</i> (Gabb) <i>Chrysodomus arnoldi</i> Rivers? <i>Neptunea humerosa</i> Gabb <i>Calicantharus kernensis</i> (Anderson and Martin) <i>Chrysodomus kernensis</i> Anderson and Martin <i>Neptunea kernensis</i> (Anderson and Martin) <i>Priscofusus carlsoni</i> (Anderson and Martin)	Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living
8–2.5 Ma 13? or 8–2.5 Ma 13? or 8–2.5 Ma 27–23 Ma N.D. N.D. 17–13 Ma 5 Ma–H N.D. 8 Ma–H 8 Ma–H	<i>Calicantharus kettlemanensis</i> (Arnold) <i>Calicantharus portolaensis</i> (Arnold) <i>Calicantharus portolaensis</i> (Arnold) <i>Calicantharus rancherianus</i> Addicott <i>Calicantharus</i> sp. <i>Calicantharus</i> sp. <i>Calicantharus woodfordi</i> Addicott <i>Callianassa longimana</i> Stimson <i>Callianassa</i> sp. <i>Calliclava</i> cf. <i>C. pallida</i> (Sowerby) <i>Calliostoma</i> aff. <i>C. rema</i> Strong, Hanna, and Hertlein	<i>Calicantharus kettlemanensis</i> (Arnold) <i>Calicantharus portolaensis</i> (Arnold) <i>Calicantharus portolaensis</i> (Arnold) <i>Calicantharus rancherianus</i> Addicott <i>Calicantharus</i> sp. <i>Searlesia</i> sp. <i>Calicantharus woodfordi</i> Addicott <i>Callianassa longimana</i> Stimson (Arthropoda) <i>Callianassa</i> sp. <i>Clavus</i> aff. <i>C. pallidus</i> (Sowerby) <i>Astele</i> aff. <i>A. rema</i> (Strong, Hanna, and Hertlein)	Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living burrow burrow 16N–10N; 10 to 25 m; genus, intertidal to 70 m 24N–3S; 18 to 45 m
5 Ma–H 27–13 Ma	<i>Calliostoma annulatum</i> Martyn <i>Calliostoma agustinense</i> Hertlein	<i>Calliostoma annulatum</i> Martyn <i>Calliostoma agustinensis</i> Hertlein	55N–33N; on blades of giant kelp or rocks Genus, 57N–8N; intertidal, on rocks and algae to 915 m
27–13 Ma 27–13 Ma	<i>Calliostoma carsoni</i> Addicott <i>Calliostoma carsoni</i> Addicott	<i>Calliostoma carsoni</i> Addicott <i>Calliostoma splendens</i> (Cooper) <i>diabloensis</i> Clark	Genus, 57N–8N Genus, 57N–8N
27–13 Ma 17? Ma–H 13? or 8–2.5 Ma 13? or 8–2.5 Ma 5–2.5 Ma	<i>Calliostoma carsoni</i> Addicott <i>Calliostoma</i> cf. <i>C. supragranosum</i> Carpenter <i>Calliostoma coalingense</i> Arnold <i>Calliostoma coalingense</i> Arnold <i>Calliostoma coalingense catoteron</i> Woodring	<i>Calliostoma splendens diabloensis</i> Clark <i>Calliostoma</i> cf. <i>C. supragranosum</i> Carpenter <i>Calliostoma coalingense</i> Arnold <i>Calliostoma coalingense</i> Arnold <i>Calliostoma coalingense catoteron</i> Woodring n. var.	Genus, 57N–8N 37N–26N; rocky areas, lower intertidal and sublittoral Genus, 57N–8N Genus, 57N–8N Genus, 57N–8N
5–2.5 Ma 8–5 Ma 5 Ma–H	<i>Calliostoma coalingense catoteron</i> Woodring <i>Calliostoma coalingense privum</i> Stewart <i>Calliostoma costatum</i> (Martyn)	<i>Calliostoma coalingense catoteron</i> Woodring? <i>Calliostoma coalingense privum</i> Stewart <i>Calliostoma ligatum</i> (Gould)?	Genus, 57N–8N Genus, 57N–8N 57N–33N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
8–5 Ma	<i>Calliostoma etchegoinense</i> Nomland	<i>Calliostoma etchegoinense</i> Nomland	Genus, 57N–8N
8–5 Ma	<i>Calliostoma etchegoinense</i> Nomland	<i>Calliostoma etchegoinense</i> Nomland	Genus, 57N–8N
8 Ma–H	<i>Calliostoma gemmulatum</i> Carpenter	<i>Calliostoma gemmulatum</i> Carpenter	34N–23N; rocky areas intertidal
8–2.5 Ma	<i>Calliostoma kerri</i> Arnold	<i>Calliostoma kerri</i> Arnold	Genus, 57N–8N
13–8 Ma	<i>Calliostoma olssoni</i> Maury	<i>Calliostoma olssoni</i> Maury	Genus, 57N–8N
N.D.	<i>Calliostoma</i> sp.	<i>Calliostoma</i> sp.	Genus, 57N–8N, common in intertidal and sublittoral zones
8 Ma–H	<i>Calliostoma splendens</i> Carpenter	<i>Calliostoma splendens</i> Carpenter	37N–29N
13–5 Ma	<i>Calliostoma splendens</i> Carpenter <i>diabloense</i> Clark	<i>Calliostoma splendens</i> Carpenter <i>diabloense</i> Clark	Species, 37N–29N
13–5 Ma	<i>Calliostoma splendens</i> Carpenter <i>diabloense</i> Clark	<i>Calliostoma splendens</i> Carpenter <i>diabloensis</i> Clark	Species, 37N–29N
5–2.5 Ma	<i>Calliostoma virgineum</i> (Dillwyn)	<i>Calliostoma virgineum</i> (Dillwyn)	Genus, 57N–8N
8–5 Ma	<i>Calliostoma</i> ? aff. <i>C. cammani</i> Dall	<i>Calliostoma</i> ? aff. <i>C. cammani</i> Dall	Genus, 57N–8N
N.D.	<i>Callista</i> sp.	<i>Callista</i> sp.	If <i>Callista</i> , genus common in Adriatic Sea from 45N to 40N
N.D.	<i>Callistochiton</i> sp. (Polyplacophora)	<i>Callistochiton</i> sp. (Polyplacophora)	See Keen (1971, p. 873)
13–8 Ma	<i>Callucina guincola</i> Olsson	<i>Callucina guincola</i> Olsson	Genus, 31N–16N; intertidal to 55 m
17 Ma–H	<i>Calyptraea (Calyptraea) mamillaris</i> Broderip	<i>Calyptraea inornata</i> Gabb	25N–5S, through Gulf of California
17 Ma–H	<i>Calyptraea (Calyptraea) mamillaris</i> Broderip	<i>Calyptraea inornata</i> (Gabb)	25N–5S, through Gulf of California; intertidal to 137 m
17 Ma–H	<i>Calyptraea (Calyptraea) mamillaris</i> Broderip	<i>Calyptraea fastigiata</i> Gould	25N–5S, through Gulf of California
17 Ma–H	<i>Calyptraea (Calyptraea) mamillaris</i> Broderip	<i>Calyptraea mamillaris</i> Broderip	25N–5S, through Gulf of California
17 Ma–H	<i>Calyptraea (Calyptraea) mamillaris</i> Broderip	<i>Calyptraea mamillaris</i> Broderip?	25N–5S, through Gulf of California
27–2.5 Ma	<i>Calyptraea (Trochita)</i> cf. <i>C. (T.) filosa</i> (Gabb)	<i>Trochita</i> cf. <i>T. spirata</i> (Forbes)	Subgenus, 24N–Chile
13 Ma–H	<i>Calyptraea (Trochita)</i> cf. <i>C. (T.) trochiformis</i> (Born)	<i>Trochita</i> cf. <i>T. trochiformis</i> (Born)	Chile north to 1S
27–2.5 Ma	<i>Calyptraea (Trochita) filosa</i> (Gabb)	<i>Trochita filosa</i> Gabb	Subgenus, 24N–Chile; surf zone on rocks
27–2.5 Ma	<i>Calyptraea (Trochita) filosa</i> (Gabb)	<i>Calyptraea (Trochita) filosa</i> (Gabb)?	Subgenus, 24N–Chile
27–2.5 Ma	<i>Calyptraea (Trochita) filosa</i> (Gabb)	<i>Calyptraea filosa</i> (Gabb)	Subgenus, 24N–Chile
27–23 Ma	<i>Calyptraea (Trochita) panzana</i> Loel and Corey	<i>Calyptraea costellata</i> (Conrad) <i>panzana</i> Loel and Corey	Subgenus, 24N–Chile
N.D.	<i>Calyptraea (Trochita)</i> sp.	<i>Trochita</i> sp.	Subgenus, 24N–Chile
27 Ma–H	<i>Calyptraea (Trochita) spirata</i> (Forbes)	<i>Calyptraea (Trochita) spirata</i> (Forbes)	24N–15N
27 Ma–H	<i>Calyptraea (Trochita) spirata</i> (Forbes)	<i>Calyptraea costellata</i> (Conrad)	24N–15N; clinging to surf-beaten rocks on exposed coasts
27 Ma–H	<i>Calyptraea (Trochita) spirata</i> (Forbes)	<i>Trochita costellata</i> Conrad	24N–15N
13 Ma–H	<i>Calyptraea (Trochita) trochiformis</i> (Born)	<i>Trochita radians</i> Lamarck	Chile north to 1S
13 Ma–H	<i>Calyptraea (Trochita) trochiformis</i> (Born)	<i>Trochita radians</i> (Lamarck)	Chile north to 1S
13 Ma–H	<i>Calyptraea (Trochita) trochiformis</i> (Born)	<i>Trochita trochiformis</i> (Born)	Chile north to 1S
N.D.	<i>Calyptraea (Trochita)</i> ? sp.	<i>Trochita</i> ? n.sp.	Subgenus, 24N–Chile
27–23 Ma	<i>Calyptraea coreyi</i> Addicott	<i>Calyptraea coreyi</i> Addicott	Genus, 56N–5S, through Gulf of California
13–8 Ma	<i>Calyptraea diabloensis</i> Clark	<i>Calyptraea diabloensis</i> Clark	Genus, 56N–5S, through Gulf of California
27–5 Ma	<i>Calyptraea inornata</i> (Gabb)	<i>Calyptraea (Calyptraea) inornata</i> (Gabb)	Genus, 56N–5S, through Gulf of California
27–5 Ma	<i>Calyptraea inornata</i> (Gabb)	<i>Calyptraea inornata</i> (Gabb)	Genus, 56N–5S, through Gulf of California
27–5 Ma	<i>Calyptraea inornata</i> (Gabb)	<i>Calyptraea inornata</i> Conrad	Genus, 56N–5S, through Gulf of California
27–5 Ma	<i>Calyptraea inornata</i> (Gabb)	<i>Calyptraea inornata</i> Gabb	Genus, 56N–5S, through Gulf of California
27–5 Ma	<i>Calyptraea inornata</i> (Gabb)	<i>Galerus inornatus</i> ? Gabb	Genus, 56N–5S, through Gulf of California
13–8 Ma	<i>Calyptraea martini</i> Clark	<i>Calyptraea martini</i> Clark	Genus, 56N–5S, through Gulf of California
N.D.	<i>Calyptraea</i> sp.	<i>Galerus</i> sp.	Genus, 56N–5S, through Gulf of California

N.D. 23–8 Ma	<i>Calyptraea</i> sp. <i>Cancellaria</i> (<i>Barkeria</i>) <i>sanjosei</i> Anderson and Martin	<i>Calyptraea</i> sp. <i>Cancellaria sanjosei</i> Anderson and Martin	Genus, 56N–5S, through Gulf of California Genus, 56N–3S, through Gulf of California; 27 to 549 m
23–8 Ma	<i>Cancellaria</i> (<i>Barkeria</i>) <i>sanjosei</i> Anderson and Martin	<i>Cancellaria sanjosensis</i> Anderson and Martin	Genus, 56N–3S, through Gulf of California
13 Ma?–H	<i>Cancellaria</i> (<i>Cancellaria</i>) n.sp.? cf. <i>C. decussata</i> Sowerby	<i>Cancellaria</i> (<i>Cancellaria</i>) n.sp.? cf. <i>C. decussata</i> Sowerby	25N–3S, southern part Gulf of California; offshore to 80 m
23–13 Ma	<i>Cancellaria</i> (<i>Coptostoma</i>) <i>posunculensis</i> Anderson and Martin	<i>Cancellaria</i> (<i>Coptostoma</i>) <i>posunculensis</i> Anderson and Martin	Genus, 56N–3S, through Gulf of California
23–13 Ma	<i>Cancellaria</i> (<i>Coptostoma</i>) <i>posunculensis</i> Anderson and Martin	<i>Cancellaria posunculensis</i> Anderson and Martin	Genus, 56N–3S, through Gulf of California
17–13 Ma	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>kernensis</i> Addicott	<i>Cancellaria siletzensis</i> Anderson	Subgenus, 38N–33N
17–13 Ma	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>kernensis</i> Addicott	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>kernensis</i> Addicott	Subgenus, 38N–33N
17–13 Ma	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>kernensis</i> Addicott	<i>Crawfordiana</i> cf. <i>C. weaveri</i> (Etherington)	Subgenus, 38N–33N
23–17 Ma	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>siletzensis</i> Anderson	<i>Cancellaria siletzensis</i> Anderson	Subgenus, 38N–33N
N.D.	<i>Cancellaria</i> (<i>Crawfordina</i>) sp.	<i>Crawfordina</i> ? n.sp.?	Subgenus, 38N–33N
23–13 Ma	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>weaveri</i> Etherington	<i>Cancellaria weaveri</i> Etherington	Subgenus, 38N–33N
23–13 Ma	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>weaveri</i> Etherington	<i>Cancellaria</i> (<i>Crawfordina</i>) <i>weaveri</i> Etherington	Subgenus, 38N–33N
17? Ma–H	<i>Cancellaria</i> (<i>Euclia</i>) cf. <i>C. (E.) cassidiformis</i> Sowerby	<i>Cancellaria</i> (<i>Euclia</i>) cf. <i>C. (E.) cassidiformis</i> Sowerby	Gulf of California–5S; at extreme low tide to 37 m
17–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>circumspinoso</i> Addicott	<i>Cancellaria</i> (<i>Euclia</i>) <i>circumspinoso</i> Addicott	Subgenus, northern Gulf of California–5S
17–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>circumspinoso</i> Addicott	<i>Cancellaria circumspinoso</i> Addicott	Subgenus, northern Gulf of California–5S
23–8 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>condoni</i> Anderson	<i>Cancellaria condoni</i> (Cooper)	Subgenus, northern Gulf of California–5S
23–8 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>condoni</i> Anderson	<i>Cancellaria</i> (<i>Euclia</i>) <i>condoni</i> Anderson	Subgenus, northern Gulf of California–5S
23–8 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>condoni</i> Anderson	<i>Cancellaria condoni</i> Anderson	Subgenus, northern Gulf of California–5S
23–8 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>condoni</i> Anderson	<i>Cancellaria dalliana condoni</i> (Anderson)	Subgenus, northern Gulf of California–5S
27–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>dalliana</i> Anderson	<i>Cancellaria</i> (<i>Euclia</i>) <i>dalliana</i> Anderson	Subgenus, northern Gulf of California–5S
27–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>dalliana</i> Anderson	<i>Cancellaria dalliana</i> Anderson	Subgenus, northern Gulf of California–5S
23–8 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>joaquinensis</i> Anderson	<i>Cancellaria joaquinensis</i> Anderson (<i>pabloensis</i> Clark)	Subgenus, northern Gulf of California–5S
23–8 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>joaquinensis</i> Anderson	<i>Cancellaria joaquinensis</i> Anderson	Subgenus, northern Gulf of California–5S
17–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>ocoyana</i> Addicott	<i>Cancellaria</i> (<i>Euclia</i>) <i>ocoyana</i> Addicott	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>oregonensis</i> Conrad	<i>Cancellaria</i> (<i>Euclia</i>) <i>oregonensis</i> Conrad	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>oregonensis</i> Conrad	<i>Cancellaria andersoni</i> Clark	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>oregonensis</i> Conrad	<i>Cancellaria condoni</i> Anderson (in part, in Anderson, 1905)	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>oregonensis</i> Conrad	<i>Cancellaria dalliana</i> Anderson (in part in Anderson and Martin, 1914)	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>oregonensis</i> Conrad	<i>Cancellaria oregonensis</i> Conrad	Subgenus, northern Gulf of California–5S
13–5 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>pabloensis</i> Clark	<i>Cancellaria ramonensis</i> Clark	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>pacifica</i> Anderson	<i>Cancellaria pabloensis</i> Clark	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>pacifica</i> Anderson	<i>Cancellaria andersoni</i> Arnold	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>pacifica</i> Anderson	<i>Cancellaria</i> (<i>Euclia</i>) <i>pacifica</i> Anderson	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>pacifica</i> Anderson	<i>Cancellaria pacifica</i> Anderson	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>simplex</i> Anderson	<i>Cancellaria</i> (<i>Euclia</i>) <i>simplex</i> Anderson	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>simplex</i> Anderson	<i>Cancellaria vetusta</i> Gabb	Subgenus, northern Gulf of California–5S
23–13 Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>simplex</i> Anderson	<i>Cancellaria simplex</i> Anderson	Subgenus, northern Gulf of California–5S
N.D.	<i>Cancellaria</i> (<i>Euclia</i>) sp.	<i>Cancellaria</i> (<i>Euclia</i>) sp.	Subgenus, northern Gulf of California–5S
23–17 or 8? Ma	<i>Cancellaria</i> (<i>Euclia</i>) <i>wynoochensis</i> Weaver	<i>Cancellaria wynoochensis</i> Weaver	Subgenus, northern Gulf of California–5S
23–13 or 8? Ma	<i>Cancellaria</i> (<i>Euclia</i> ?) <i>nevadensis</i> Anderson and Martin	<i>Cancellaria</i> (<i>Euclia</i> ?) <i>nevadensis</i> Anderson and Martin	Subgenus, northern Gulf of California–5S
23–13 or 8? Ma	<i>Cancellaria</i> (<i>Euclia</i> ?) <i>nevadensis</i> Anderson and Martin	<i>Cancellaria nevadensis</i> Anderson and Martin	Subgenus, northern Gulf of California–5S
17–13 Ma	<i>Cancellaria</i> (<i>Narona</i>) <i>birchi</i> Addicott	<i>Cancellaria</i> (<i>Narona</i>) <i>birchi</i> Addicott	Subgenus, 24N–5S; in depths to 128 m

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23–13 Ma	<i>Cancellaria (Pryoclia) lickana</i> Anderson and Martin	<i>Cancellaria (Pryoclia) lickana</i> Anderson and Martin	Subgenus, Gulf of California–5S, deep water; to 37 m
23–13 Ma	<i>Cancellaria (Pryoclia) lickana</i> Anderson and Martin	<i>Cancellaria andersoni</i> Arnold	Subgenus, Gulf of California–5S, deep water; to 37 m
23–13 Ma	<i>Cancellaria (Pryoclia) lickana</i> Anderson and Martin	<i>Cancellaria lickana</i> Anderson and Martin	Subgenus, Gulf of California–5S, deep water; to 37 m
23–13 Ma	<i>Cancellaria (Pryoclia) lickana</i> Anderson and Martin	<i>Cancellaria lickana</i> Anderson and Martin (<i>joaquinensis</i> Anderson)	Subgenus, Gulf of California–5S, deep water; to 37 m
23–13 Ma	<i>Cancellaria (Pryoclia) lickana</i> Anderson and Martin	<i>Thais (Nuclella) lima Martyn</i> (in Loel and Corey, 1932)	Subgenus, Gulf of California–5S, deep water; to 37 m
8–2.5 Ma	<i>Cancellaria arnoldi</i> Dall	“ <i>Cancellaria</i> ” <i>arnoldi</i> Dall	Genus, 56N–3S, through Gulf of California
8–2.5 Ma	<i>Cancellaria arnoldi</i> Dall	<i>Cancellaria arnoldi</i> Dall	Genus, 56N–3S, through Gulf of California
5–2.5 Ma	<i>Cancellaria</i> cf. <i>C. altispira</i> Gabb	“ <i>Cancellaria</i> ” cf. <i>C. altispira</i> Gabb	Genus, 56N–3S, through Gulf of California
5 Ma–H	<i>Cancellaria</i> cf. <i>C. cooperi</i> Gabb	<i>Progabbia</i> cf. <i>P. cooperi</i> (Gabb)	37N–28N; offshore sandy substrate
13? or 8–5 Ma	<i>Cancellaria</i> cf. <i>C. fernandoensis</i> Arnold	<i>Cancellaria</i> cf. <i>C. fernandoensis</i> Arnold	Genus, 56N–3S, through Gulf of California
8–5 Ma	<i>Cancellaria crassa</i> Nomland	<i>Cancellaria crassa</i> Nomland	Genus, 56N–3S, through Gulf of California
5 Ma–H	<i>Cancellaria crawfordiana</i> Dall	<i>Cancellaria crawfordiana</i> Dall	38N–33N
5 Ma–H	<i>Cancellaria crawfordiana</i> Dall	<i>Crawfordiana fulgeri</i> (Arnold)	38N–33N
23–13 Ma	<i>Cancellaria dalli</i> (Anderson and Martin)	<i>Cancellaria bakeri</i> (Anderson)	Genus, 56N–3S, through Gulf of California
23–13 Ma	<i>Cancellaria dalli</i> (Anderson and Martin)	<i>Cancellaria barkeri</i> (Anderson in Hanna)	Genus, 56N–3S, through Gulf of California
23–13 Ma	<i>Cancellaria dalli</i> (Anderson and Martin)	<i>Cancellaria dalli</i> (Anderson and Martin)	Genus, 56N–3S, through Gulf of California
23–13 Ma	<i>Cancellaria dalli</i> (Anderson and Martin)	<i>Fossarius dalli</i> Anderson and Martin	Genus, 56N–3S, through Gulf of California
13–5 Ma	<i>Cancellaria elsemerensis</i> English	<i>Cancellaria elsemerensis</i> English	Genus, 56N–3S, through Gulf of California
13? or 8–5 Ma	<i>Cancellaria fernandoensis</i> Arnold	<i>Cancellaria fernandoensis</i> Arnold	Genus, 56N–3S, through Gulf of California
8–5 Ma	<i>Cancellaria fernandoensis</i> Arnold <i>tribulis</i> Nomland	<i>Cancellaria fernandoensis</i> Arnold <i>tribulis</i> Nomland	Genus, 56N–3S, through Gulf of California
27–23 Ma	<i>Cancellaria galei</i> Addicott	<i>Cancellaria galei</i> Addicott	Genus, 56N–3S through Gulf of California
8–5 Ma	<i>Cancellaria hamlini</i> Carson	<i>Cancellaria hamlini</i> Carson	Genus, 56N–3S, through Gulf of California
13–2.5 Ma	<i>Cancellaria hemphilli</i> Dall	“ <i>Cancellaria</i> ” <i>hemphilli</i> Dall	Genus, 56N–3S, through Gulf of California
13–2.5 Ma	<i>Cancellaria hemphilli</i> Dall	<i>Cancellaria hemphilli</i> Dall	Genus, 56N–3S, through Gulf of California
17–13 Ma	<i>Cancellaria keenae</i> Addicott	<i>Cancellaria keenae</i> Addicott	Genus, 56N–3S, through Gulf of California
5–2.5 Ma	<i>Cancellaria lipara</i> Woodring	<i>Cancellaria lipara</i> Woodring	Genus, 56N–3S, through Gulf of California
13 Ma–H	<i>Cancellaria obesa</i> Sowerby	<i>Cancellaria obesa</i> Sowerby	27N–3S; intertidal to 90 m
8–5 Ma	<i>Cancellaria planospira</i> Grant and Gale	<i>Cancellaria planospira</i> Grant and Gale	Genus, 56N–3S, through Gulf of California
5–2.5 Ma	<i>Cancellaria quadrata</i> Moody	“ <i>Cancellaria</i> ” <i>quadrata</i> Moody	Genus, 56N–3S, through Gulf of California
13? or 8–2.5 Ma	<i>Cancellaria rapa</i> Nomland	“ <i>Cancellaria</i> ” <i>rapa</i> Nomland?	Genus, 56N–3S, through Gulf of California
13? or 8–2.5 Ma	<i>Cancellaria rapa</i> Nomland	<i>Cancellaria rapa</i> Nomland	Genus, 56N–3S, through Gulf of California
5–2.5 Ma	<i>Cancellaria rapa perrini</i> Carson	“ <i>Cancellaria</i> ” <i>rapa perrini</i> Carson	Genus, 56N–3S, through Gulf of California
N.D.	<i>Cancellaria</i> sp.	<i>Cancellaria</i> n.sp.? A	Genus, 56N–3S, through Gulf of California
N.D.	<i>Cancellaria</i> sp.	<i>Progabbia</i> sp.	Genus, 56N–3S, through Gulf of California
5–2.5 Ma	<i>Cancellaria</i> sp. a (Davis, 1998)	<i>Cancellaria</i> sp. A (Davis, 1998)	Genus, 56N–3S, through Gulf of California
5–2.5 Ma	<i>Cancellaria</i> sp. b (Davis, 1998)	<i>Cancellaria</i> sp. B (Davis, 1998)	Genus, 56N–3S, through Gulf of California
13–2.5 Ma	<i>Cancellaria tritonidea</i> Gabb	<i>Cancellaria tritonidea</i> Gabb	Genus, 56N–3S, through Gulf of California
N.D.	<i>Cancer antennarius</i> Stimpson	<i>Cancer antennarius</i> Stimpson (Arthropoda)	N.D.
N.D.	<i>Cancer magister</i> Dana	<i>Cancer magister</i> Dana	N.D.
N.D.	<i>Cancer</i> sp. aff. <i>C. magister</i> Dana	<i>Cancer</i> sp. aff. <i>C. magister</i> Dana	N.D.
5 Ma–H	<i>Cantharus (Gemophos)</i> cf. <i>C. (G.) elegans</i> (Griffith and Pidgeon)	<i>Cantharus?</i> cf. <i>C. elegans</i> (Gray)	25N–5S; intertidal on rocks
5 Ma–H	<i>Cantharus (Gemophos) ringens</i> (Reeve)	<i>Cantharus</i> aff. <i>C. ringens</i> (Reeve)	24N–3S; on rocks intertidal

N.D.	<i>Cantharus</i> sp.	<i>Cantharus</i> sp.	Genus, 28N–5S, through Gulf of California; intertidal on rocks
N.D.	<i>Capulus</i> sp.	<i>Capulus</i> sp.	Genus, 34N–29N
N.D.	<i>Capulus</i> sp.	<i>Capulus</i> sp.	Genus, 34N–29N; 37 to 46 m
5 Ma–H	<i>Capulus?</i> cf. <i>C. californicus</i> Dall	<i>Capulus?</i> cf. <i>C. californicus</i> Dall	34N–29N; 37 to 46 m
5 Ma–H	<i>Cardiomya</i> cf. <i>C. planetica</i> Dall	<i>Cardiomya</i> cf. <i>C. planetica</i> Dall	55.6N–7.1N; 25 to 3000 m
N.D.	<i>Cardiomya</i> n.sp.? Powell	<i>Cardiomya</i> n.sp.? Powell	Genus, 61N–1S; 5 to 3000 m
5 Ma–H	<i>Cardiomya pectinata</i> (Carpenter)	<i>Cuspidaria</i> (<i>Cardiomya</i>) <i>pectinata</i> Carpenter	60.9N–36.7N; 5 to 1000 m
8? Ma–H	<i>Cardita</i> (<i>Carditamera</i>) aff. <i>C. (C.) radiata</i> Sowerby	<i>Glans</i> n.sp. aff. <i>G. radiata</i> (Sowerby)	28N–3S; on mudflats to 24 m
13? Ma–H	<i>Cardita</i> n.sp. aff. <i>C. affinis</i> Sowerby	<i>Cardita</i> n.sp. aff. <i>C. affinis</i> (Sowerby)	29N–4S; under rocks and in crevices to 27 m
N.D.	<i>Cardita</i> sp.	<i>Cardita</i> sp. <i>indet.</i>	Questionable identification
N.D.	<i>Cardita</i> sp.	<i>Cardita</i> sp.	Genus, 29N–4S; sand, rocks, and mud, to 100 m
23–17 Ma	<i>Cardita</i> sp. aff. <i>C. caribbeanensis</i> Olsson	<i>Cardita</i> sp. aff. <i>C. caribbeanensis</i> Olsson	Genus, 31N–15 N, Gulf of Mexico
5–2.5 Ma	<i>Cardita subtenta</i> (Conrad)	<i>Venericardia subtenta</i> Conrad	Genus, if <i>Cardita</i> , 29N–4S
5–2.5 Ma	<i>Cardita subtenta</i> var. <i>quadrata</i> (Conrad)	<i>Venericardia subtenta</i> var. <i>quadrata</i> Conrad	Genus, if <i>Cardita</i> , 29N–4S
13 Ma–H	<i>Cardites crassicosata</i> (Sowerby)	<i>Cardites crassicosata</i> (Sowerby)	27N–2S; intertidal to 55 m
N.D.	<i>Codium</i> sp.	<i>Codium</i> sp.	Questionable generic assignments of <i>Codium</i>
N.D.	<i>Carinodrillia</i> n.sp. Powell	<i>Carinodrillia</i> n.sp. Powell	Genus, 31N in Gulf of California–3S; gravel, rocks, and sand, to 80 m
27–23 Ma	<i>Cassidulus ellipticus</i> Kew	<i>Cassidulus (Rhynchopygus) ellipticus</i> Kew (Echinodermata)	Genus, Gulf of California–0
N.D.	<i>Cassidulus mexicanus</i> Kew	<i>Cassidulus mexicans</i> Kew	Genus, Gulf of California–0
27–23 Ma	<i>Cassidulus?</i> <i>mexicanus</i> Kew	<i>Echinolampas?</i>	Genus, Gulf of California–0
N.D.	<i>Cassid</i> sp.	<i>Cassid</i> sp.	Genus, 23N–3S, through Gulf of California; on sand in shallow water
13–8 Ma	<i>Cassis subtuberosus</i> Hanna	<i>Cassis subtuberosa</i> Hanna	Genus, 23N–3S, through Gulf of California
N.D.	<i>Centrostephanus?</i> sp.	<i>Centrostephanus?</i> sp. (Echinodermata)	Genus, 23N–8N, and Gulf of California
N.D.	<i>Cerastoderma</i> sp.	<i>Cerastoderma</i> sp.	Questionable generic assignment
17? or 8 Ma–H	<i>Ceratostoma</i> aff. <i>C. foliata</i> (Gmelin)	<i>Purpura</i> cf. <i>P. foliata</i> Martyn	57N–33N
5–2.5 Ma	<i>Ceratostoma</i> cf. <i>C. carpenteri</i> (Dall)	<i>Jaton</i> cf. <i>J. carpenteri</i> (Dall)	Genus, 57N–5S; through Gulf of California; intertidal on rocks to 64 m
5? Ma–H	<i>Ceratostoma</i> cf. <i>C. monoceros</i> (Sowerby)	<i>Ceratostoma</i> cf. <i>C. monoceros</i> (Sowerby)	27N–25N
17–13 Ma	<i>Ceratostoma delorae</i> Hall	<i>Ceratostoma delorae</i> Hall	Genus, 57N–5S, through Gulf of California
17? or 8 Ma–H	<i>Ceratostoma foliata</i> (Gmelin)	<i>Ceratostoma foliata</i> (Gmelin)	57N–33N
17? or 8 Ma–H	<i>Ceratostoma foliata</i> (Gmelin)	<i>Ceratostoma foliatum</i> (Gmelin)	57N–33N
5 Ma–H	<i>Ceratostoma gemma</i> (Sowerby)	<i>Maxwellia gemma</i> (Sowerby) (<i>Jaton</i> , <i>Murex</i> , <i>Purpura</i> of authors)	34N–27N
13–8 Ma	<i>Ceratostoma nanna</i> (Nomland)	<i>Ceratostoma nanna</i> (Nomland)	Genus, 57N–5S, through Gulf of California
13–8 Ma	<i>Ceratostoma nanna</i> (Nomland)	<i>Purpura nanna</i> Nomland	Genus, 57N–5S, through Gulf of California
8 Ma–H	<i>Ceratostoma nuttalli</i> (Conrad)?	<i>Ceratostoma nuttalli</i> (Conrad)?	37N–27N
N.D.	<i>Ceratostoma</i> sp.	<i>Jaton?</i> sp.	Genus, 57N–5S, through Gulf of California
27–23 Ma	<i>Ceratostoma?</i> aff. <i>C. perponderosa</i> (Dall)	<i>Ceratostoma?</i> aff. <i>C. perponderosum</i> (Dall)	Genus, 57N–5S, through Gulf of California
5–2.5 Ma	<i>Cerithiidea californica</i> (Haldeman)	<i>Cerithiidae californica</i> (Haldeman)	38N–27N; intertidal on mudflats
17–13 Ma	<i>Cerithiopsis</i> aff. <i>C. subloriosa</i> Baker, Hanna, and Strong	<i>Cerithiopsis</i> aff. <i>C. subloriosa</i> Baker, Hanna, and Strong	Genus, 60N–5S; species, Gulf of California
17–13 Ma	<i>Cerithiopsis</i> n.sp. aff. <i>C. carpenteri</i> Bartsch	<i>Cerithiopsis</i> n.sp. aff. <i>C. carpenteri</i> Bartsch	<i>C. carpenteri</i> , 34N–33N; usually on sponges
N.D.	<i>Cerithiopsis</i> n.sp. Powell	<i>Cerithiopsis</i> n.sp. Powell	Genus, 60N–5S; intertidal to 156 m
N.D.	<i>Cerithiopsis</i> sp.	<i>Cerithiopsis</i> sp.	Genus, 60N–27N
5–2.5 Ma	<i>Cerithium (Thericium) simplicus</i> Grant and Gale?	<i>Cerithium simplicus</i> Grant and Gale?	Genus, Gulf of California–5S; intertidal to 37 m
13 Ma–H	<i>Cerithium (Thericium) uncinatum</i> (Gmelin)	<i>Cerithium (Thericium) uncinatum</i> (Gmelin)	Gulf of California–3S; mostly offshore to 37 m
N.D.	<i>Cerithium</i> sp.	<i>Cerithium</i> sp.	Genus, Gulf of California–5S
N.D.	<i>Cerithium</i> sp.	<i>Cerithium</i> sp.	If <i>Cerithium</i> ; genus, Gulf of California–5S
N.D.	<i>Cerithium</i> sp.	<i>Cerithium</i> sp.	Questionable generic assignment
5 Ma–H	<i>Chaceia ovoidea</i> (Gould)	<i>Pholadidea ovoidea</i> (Gould)	37.9N–27.7N; intertidal to 46 m, boring in shale and rocks at low tide

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23? or 13 Ma–H	<i>Chama (Chama) arcana</i> Bernard	<i>Chama pellucida</i> (Sowerby)	37.1N–9.7N; in bays attached to rocks, intertidal to 80 m
13 Ma–H	<i>Chama (Chama) frondosa</i> Broderip	<i>Chama frondosa</i> Broderip	24N–2N; intertidal on rocks to a few meters
13 Ma–H	<i>Chama buddiana</i> Adams	<i>Chama buddiana</i> C. B. Adams	11N–0
13 Ma–H	<i>Chama corallina</i> Olsson	<i>Chama corallina</i> Olsson	23N–8N; dredged in 55 m
N.D.	<i>Chama</i> sp.	<i>Chama</i> sp.	Genus, 44N–5S; intertidal to 46 m
5 Ma–H	<i>Cheilea cepacea</i> (Broderip)	<i>Cheilea cepacea</i> (Broderip)	32N in Gulf of California
13 Ma–H	<i>Cheilea equestris</i> Linnaeus	<i>Mitrularia equestris</i> Linnaeus	35N–15N Atlantic; 498 to 622 m
13? or 8–2.5 Ma	<i>Chione (Anomalocardia) fernandoensis</i> English	<i>Chione fernandoensis</i> English	Genus, 34N–6S; intertidal, sand or mud to 110 m
13? or 8–2.5 Ma	<i>Chione (Anomalocardia) fernandoensis</i> English	<i>Chione fernandoensis</i> English	Genus, 34N–6S
5–2.5 Ma	<i>Chione (Chione) allisoni</i> Hertlein	<i>Chione (Chione) allisoni</i> Hertlein	Genus, 34N–6S
17? or 5 Ma–H	<i>Chione (Chione) californiensis</i> (Broderip)	<i>Chione succincta</i> Valenciennes	37.7N–16.9N; offshore, mud substrate to 50 m, and mudflats, bays
5 Ma–H	<i>Chione (Chione) cf. C. (C.) undatella</i> Sowerby	<i>Chione (Chione) cf. C. (C.) undatella</i> Sowerby	34N–5S; protected sandy beaches and offshore to 40 m
5 Ma–H	<i>Chione (Chione?) subimbricata</i> (Sowerby)	<i>Anomalocardia</i> sp. cf. <i>A. subimbricata</i> Sowerby	28N–5S; offshore to 9 m
8? Ma–H	<i>Chione (Chionista) aff. C. (C.) gnidia</i> (Broderip and Sowerby)	<i>Chione</i> aff. <i>C. gnidia</i> (Broderip and Sowerby)	32N–6S; in bays and offshore to 33 m
8–5 Ma	<i>Chione (Chionopsis) coalingensis</i> Adegoke	<i>Chione (Chionopsis) coalingensis</i> Adegoke	Subgenus, 27N–4S; to 70 m
8–5 Ma	<i>Chione (Chionopsis) simplicata</i> Nomland	<i>Chione (Chionopsis) simplicata</i> Nomland	Subgenus, 27N–4S
N.D.	<i>Chione (Chionopsis) sp.</i>	<i>Chione (Chionopsis) sp.</i>	Subgenus, 27N–4S
23–8 Ma	<i>Chione (Chionopsis) temblorensis</i> (Anderson)	<i>Chione (Chione) temblorensis</i> (Anderson)	Subgenus, 27N–4S
23–8 Ma	<i>Chione (Chionopsis) temblorensis</i> (Anderson)	<i>Chione (Chionopsis) temblorensis</i> (Anderson)?	Subgenus, 27N–4S
23–8 Ma	<i>Chione (Chionopsis) temblorensis</i> (Anderson)	<i>Chione temblorensis</i> (Anderson)	Subgenus, 27N–4S
5 Ma–H	<i>Chione (Lirophora) aff. C. (L.) latilaminosa</i> Anderson and Martin	<i>Chione</i> aff. <i>C. latilaminosa</i> Anderson and Martin	Subgenus, 28N–5S
5 Ma–H	<i>Chione (Lirophora) aff. C. (L.) latilaminosa</i> Anderson and Martin	<i>Chione (Lirophora) aff. C. latilaminosa</i> Anderson and Martin	Subgenus, 28N–5S
5 Ma–H	<i>Chione (Lirophora) aff. C. (L.) mariea</i> (d'Orbigny)	<i>Chione (Lirophora) aff. C. mariea</i> (d'Orbigny)	28N–3S, through Gulf of California; offshore to 110 m
5–2.5 Ma	<i>Chione (Lirophora) hannai</i> Parker	<i>Chione (Lirophora) hannai</i> Parker	Genus, 34N–6S
27–13 Ma	<i>Chione (Lirophora) latilaminosa</i> Anderson and Martin	<i>Chione (Lirophora) latilaminosa</i> Anderson and Martin	Subgenus, 28N–5S; to 110 m
27–13 Ma	<i>Chione (Lirophora) latilaminosa</i> Anderson and Martin	<i>Chione latilaminosa</i> Anderson	Subgenus, 28N–5S
23–17 Ma	<i>Chione (Securella) ensifera</i> (Dall)	<i>Chione (Securella) ensifera</i> (Dall)	Genus, 34N–6S; intertidal, sand or mud, to 110 m
5–2.5 Ma	<i>Chione (Securella) kanakoffi</i> Hertlein	<i>Chione (Securella) kanakoffi</i> Hertlein	Genus, 34N–6S
8–2.5 Ma	<i>Chione</i> cf. <i>C. elsmerensis</i> English	<i>Chione</i> cf. <i>C. elsmerensis</i> English	Genus, 34N–6S
13–8 Ma	<i>Chione</i> cf. <i>wilcoxi</i> (Dall)	<i>Chione</i> cf. <i>wilcoxi</i> (Dall)	Genus, 34N–6S
13–8 Ma	<i>Chione diabloensis</i> Clark	<i>Chione diabloensis</i> Clark	Genus, 34N–6S
8–2.5 Ma	<i>Chione elsmerensis</i> English	<i>Chione (Securella) elsmerensis</i> English	Genus, 34N–6S
8–2.5 Ma	<i>Chione elsmerensis</i> English	<i>Chione elsmerensis</i> English	Genus, 34N–6S
8–2.5 Ma	<i>Chione elsmerensis</i> English	<i>Securella elsmerensis</i> (English)	Genus, 34N–6S
27–23 Ma	<i>Chione juanensis</i> Loel and Corey	<i>Chione juanensis</i> Loel and Corey	Genus, 34N–6S
13–8 Ma	<i>Chione margaritana</i> Anderson and Martin	<i>Securella margaritana</i> (Anderson and Martin)	Genus, 34N–6S
13–8 Ma	<i>Chione pabloensis</i> Clark	<i>Chione pabloensis</i> Clark	Genus, 34N–6S
27–8 Ma	<i>Chione panzana</i> Anderson and Martin	<i>Securella panzana</i> (Anderson and Martin)	Genus, 34N–6S
27–8 Ma	<i>Chione panzana</i> Anderson and Martin	<i>Chione panzana</i> Anderson and Martin	Genus, 34N–6S

27–23 or 5? Ma	<i>Chione richthofeni</i> Hertlein and Jordan	<i>Chione richthofeni</i> Hertlein and Jordan	Genus, 34N–6S
27–23 Ma	<i>Chione schencki</i> Loel and Corey (not <i>C. vickeryi</i> Wiedey)	<i>Chione schencki</i> Loel and Corey	Genus, 34N–6S
17–2.5 Ma	<i>Chione securis</i> (Shumard)	<i>Chione securis</i> (Shumard)	Genus, 34N–6S
17–2.5 Ma	<i>Chione securis</i> (Shumard)	<i>Venus (Chione) securis</i> Shumard	Genus, 34N–6S
17–2.5 Ma	<i>Chione securis</i> (Shumard)	<i>Securella securis</i> (Shumard)	Genus, 34N–6S
17–8 Ma	<i>Chione simplicata</i> Nomland	<i>Chione (Chinopsis) simplicata</i> Nomland	Genus, 34N–6S
17–8 Ma	<i>Chione simplicata</i> Nomland	<i>Chione simplicata</i> Nomland	Genus, 34N–6S
17–8 Ma	<i>Chione simplicata</i> Nomland	<i>Chione simplicata</i> Nomland	Genus, 34N–6S
N.D.	<i>Chione</i> sp.	<i>Venus (Chione)</i> sp.	Genus, 34N–6S
27–23 Ma	<i>Chione temblorensis subtemblorensis</i> Loel and Corey	<i>Chione temblorensis</i> (Anderson)	Genus, 34N–6S
27–23 Ma	<i>Chione temblorensis subtemblorensis</i> Loel and Corey	<i>Chione temblorensis subtemblorensis</i> Loel and Corey	Genus, 34N–6S
13–8 Ma	<i>Chione vickeryi</i> Wiedey	<i>Chione vickeryi</i> Wiedey	Genus, 34N–6S
5–1 Ma	<i>Chlamys</i> aff. <i>C. anapleus</i> Woodring	<i>Chlamys</i> aff. <i>C. anapleus</i> Woodring	Genus, 70N–1S
27? Ma–H	<i>Chlamys</i> aff. <i>C. mollita</i> (Reeve) 27? Ma–Holocene	<i>Chlamys</i> aff. <i>C. mollita</i> (Reeve)	Japan, 35N–27N
32–23 Ma	<i>Chlamys</i> aff. <i>C. sespeensis</i> (Arnold) 32–23 Ma	<i>Pecten (Chlamys)</i> aff. <i>P. (C.) sespeensis</i> (Arnold) n.sp.?	Genus, 70N–1S
8–2.5 Ma	<i>Chlamys bartschi</i> (Arnold) 8–2.5 Ma	<i>Chlamys bartschi</i> (Arnold) (Moore, 1984, p. B25)	Genus, 70N–1S
27–17 Ma	<i>Chlamys branneri</i> (Arnold) 27–17 Ma	<i>Pecten branneri</i> Arnold	Genus, 70N–1S
27–17 Ma	<i>Chlamys branneri</i> (Arnold) 27–17 Ma	<i>Chlamys branneri</i> (Arnold)	Genus, 70N–1S
65 Ma	<i>Chlamys</i> cf. <i>C. proavus</i> (Arnold)	<i>Chlamys</i> cf. <i>C. proavus</i> (Arnold)	Genus, 70N–1S; species, Paleocene
13–2.5 Ma	<i>Chlamys corteziana</i> Durham 13–2.5 Ma	<i>Chlamys corteziana</i> (Durham)	Genus, 70N–1S
13–2.5 Ma	<i>Chlamys corteziana</i> Durham 13–2.5 Ma	<i>Chlamys corteziana</i> Durham	Genus, 70N–1S
13–2.5 Ma	<i>Chlamys corteziana</i> Durham 13–2.5 Ma	<i>Pecten sancti-ludovici</i> Anderson and Martin in Hanna	Genus, 70N–1S
5–2.5 Ma	<i>Chlamys egregius</i> (Nomland) 5–2.5 Ma	<i>Chlamys egregius</i> (Nomland)	Genus, 70N–1S
5–2.5 Ma	<i>Chlamys hastata ellisi</i> Hertlein and Grant 5–2.5 Ma	<i>Chlamys (Chlamys) hastata ellisi</i> Hertlein and Grant	Species 60N–33N
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Chlamys (Chlamys hastata)</i> Sowerby	59.5N–32.7N; rocky substrate, sand, on shale, intertidal to 160 m
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Chlamys (Chlamys) hastata</i> Sowerby	59.5N–32.7N
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Chlamys hastata</i> (Sowerby)	59.5N–32.7N
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Chlamys hastatus</i> (Sowerby) 59.5N–32.7N	
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Chlamys hastatus</i> Sowerby	59.5N–32.7N
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Pecten (Chlamys) hastatus</i> Sowerby	59.5N–32.7N
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Pecten hastatus</i> Sowerby	59.5N–32.7N
13 Ma–H	<i>Chlamys hastata hastata</i> (Sowerby) 13 Ma–Holocene	<i>Pecten lawsoni</i> Arnold	59.5N–32.7N
8? Ma–H	<i>Chlamys hastata hericius</i> (Gould) 8 Ma–Holocene	? <i>Chlamys hericius</i> (Gould)	59.5N–32.7N
8? Ma–H	<i>Chlamys hastata hericius</i> (Gould) 8 Ma–Holocene	? <i>Chlamys hastata</i> forma <i>hericia</i> (Gould)	59.5N–32.7N
8? Ma–H	<i>Chlamys hastata hericius</i> (Gould)? 8 Ma–Holocene	<i>Chlamys (Chlamys) hastata hericius</i> Gould	Species 59.5N–32.7N; rocky substrate, intertidal to 160 m

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27–23 Ma	<i>Chlamys hertleini</i> (Loel and Corey) 27–13 Ma	<i>Pecten hertleini</i> Loel and Corey	Genus, 70N–1S
27–23 Ma	<i>Chlamys hertleini</i> (Loel and Corey) 27–13 Ma	<i>Chlamys hertleini</i> Loel and Corey	Genus, 70N–1S
27–23 Ma	<i>Chlamys hertleini</i> (Loel and Corey) 27–13 Ma	<i>Pecten (Chlamys) hertleini</i> Loel and Corey	Genus, 70N–1S
13–5 Ma	<i>Chlamys hodgei</i> (Hertlein) 13–5 Ma	<i>Chlamys hodgei</i> (Hertlein)	Genus, 70N–1S
13–5 Ma	<i>Chlamys hodgei</i> (Hertlein) 13–5 Ma	<i>Chlamys durhami</i> Adegoke	Genus, 70N–1S
5 Ma–H	<i>Chlamys islandica</i> (Muller) 5 Ma–Holocene	<i>Chlamys</i> cf. <i>C. islandicus</i> (Muller)	70N–64N
5–1 Ma	<i>Chlamys jordani</i> (Arnold) 5–1 Ma	<i>Chlamys islandicus jordani</i> (Arnold)	Genus, 70N–1S
5–1 Ma	<i>Chlamys jordani</i> (Arnold) 5–1 Ma	<i>Chlamys rubida</i> (Hinds) subsp. <i>jordani</i> (Arnold)	Genus, 70N–1S
5–1 Ma	<i>Chlamys jordani</i> (Arnold) 5–1 Ma	<i>Chlamys (Chlamys) jordani</i> Arnold	Genus, 70N–1S
8–5 Ma–H	<i>Chlamys</i> n.sp. aff. <i>C. nipponensis</i> Kuroda	<i>Chlamys</i> n.sp. aff. <i>C. nipponensis</i> Kuroda	Genus, 70N–1S
8–1 Ma	<i>Chlamys opuntia</i> (Dall) 8–1 Ma	<i>Pecten (Chlamys) opuntia</i> Dall	Genus, 70N–1S
8–1 Ma	<i>Chlamys opuntia</i> (Dall) 8–1 Ma	<i>Chlamys opuntia</i> (Dall)	Genus, 70N–1S
8–1 Ma	<i>Chlamys opuntia</i> (Dall) 8–1 Ma	<i>Chlamys (Chlamys) opuntia</i> Dall	Genus, 70N–1S
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Chlamys (Chlamys) rubida</i> (Hinds)	59.5N–32.7N; 1 to 200 m
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Chlamys (Chlamys) rubida</i> Hinds	60N–33N
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Chlamys hindsii</i> (Carpenter)	60N–33N
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Chlamys islandicus hindsii</i> (Carpenter)	60N–33N
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Chlamys islandicus hindsii</i> (Carpenter)	60N–33N
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Chlamys rubida</i> (Hinds)	60N–33N
8 Ma–H	<i>Chlamys rubida</i> (Hinds) 8 Ma–Holocene	<i>Pecten hindsii</i> Carpenter	60N–33N
13–8 Ma	<i>Chlamys sanctiludovici</i> (Anderson and Martin) 13–8 Ma	<i>Pecten sancti-ludovici</i> Anderson and Martin	Genus, 70N–1S
32–23 Ma	<i>Chlamys sespeensis</i> (Arnold) 32–23 Ma	<i>Pecten (Lyropecten) sespeensis</i> Arnold	Genus, 70N–1S
32–23 Ma	<i>Chlamys sespeensis</i> (Arnold) 32–23 Ma	<i>Chlamys sespeensis</i> (Arnold)	Genus, 70N–1S
32–23 Ma	<i>Chlamys sespeensis</i> (Arnold) 32–23 Ma	<i>Pecten (Chlamys) sespeensis</i> (Arnold)	Genus, 70N–1S
32–23 Ma	<i>Chlamys sespeensis</i> (Arnold) 32–23 Ma	<i>Pecten sespeensis</i> Arnold	Genus, 70N–1S
17–13 Ma	<i>Chlamys sespeensis hydei</i> (Arnold) 17–13 Ma	<i>Chlamys sespeensis</i> var. <i>hydei</i> (Arnold)	Genus, 70N–1S
N.D.	<i>Chlamys</i> sp.	<i>Chlamys</i> sp.	Genus, 70N–1S
N.D.	<i>Chlamys</i> sp.	<i>Pecten (Chlamys)</i> sp.	Genus, 70N–1S
N.D.	<i>Chlamys? mediacostata mediacostata</i> (Hanna) 13? or 5–2.5 Ma	<i>Pecten (Lyropecten) mediacostatus</i> (G.D. Hanna)	Genus, 70N–1S
13? or 5–2.5 Ma	<i>Chlamys? mediacostata mediacostata</i> (Hanna) 13? or 5–2.5 Ma	<i>Pecten mediacostatus</i> G.D. Hanna	Genus, 70N–1S
N.D.	<i>Chlamys?</i> sp.	<i>Chlamys (?)</i> sp.	Genus, 70N–1S; intertidal to 275 m, free swimming
N.D.	<i>Chrysodomus</i> sp.	<i>Chrysodomus</i> sp.	Questionable generic assignment
5 Ma–H	<i>Cidarina cidaris</i> (Adams)(Echinodermata)	<i>Cidarina cidaris</i> (A. Adams) n. var.? (Echinodermata)	55N–30N
5 Ma–H	<i>Cidarina cidaris</i> (Adams)	<i>Cidarina cidaris</i> (Adams in Carpenter)	55N–30N
N.D.	<i>Cidaris</i> sp.	<i>Cidaris</i> sp.	Northeast Atlantic and Mediterranean
5 Ma–H	<i>Clathromangelia interfossa?</i> (Carpenter)	<i>Clathromangelia interfossa?</i> (no author)	48N–31N, lowtide to sublittoral
N.D.	<i>Clathurella</i> sp.	<i>Clathurella</i> sp.	Genus, 42N–32N
27–23 Ma	<i>Clavocerithium santanum</i> (Loel and Corey) (Squires, 1993)	<i>Terebra santana</i> Loel and Corey	Genus not living; <i>Terebra</i> , 34N–3S
N.D.	<i>Clementia (Egesta)</i> sp.	<i>Clementia</i> sp.	Subgenus, 28N–0
27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Chione conradiana</i> Anderson	Subgenus, 28N–0
27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Chione conradiana</i> F. M. Anderson	Subgenus, 28N–0
27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Clementia (Egesta) conradiana</i> (Anderson)	Subgenus, 28N–0
27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Clementia (Egesta) pertenuis</i> (Gabb) <i>conradiana</i> (Anderson)	Subgenus, 28N–0
27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Clementia pertenuis</i> (Gabb)	Subgenus, 28N–0

27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Clementia pertenuis conradiana</i> (Anderson)	Subgenus, 28N–0
27–13 Ma	<i>Clementia (Egesta) conradiana</i> (Anderson)	<i>Clementia pertenuis conradiana</i> (F. M. Anderson)	Subgenus, 28N–0
13–5 Ma	<i>Clementia (Egesta) martini</i> (Clark)	<i>Clementia (Egesta) martini</i> (Clark)	Subgenus, 28N–0
13–5 Ma	<i>Clementia (Egesta) martini</i> (Clark)	<i>Clementia (Egesta) martini</i> (Clark)	Subgenus, 28N–0
13–5 Ma	<i>Clementia (Egesta) martini</i> (Clark)	<i>Clementia martini</i> (Clark)	Subgenus, 28N–0
13–5 Ma	<i>Clementia (Egesta) martini</i> (Clark)	<i>Venus martini</i> Clark	Subgenus, 28N–0
23–5 Ma	<i>Clementia (Egesta) pertenuis</i> (Gabb)	<i>Clementia (Egesta) pertenuis</i> (Gabb)	Subgenus, 28N–0
23–5 Ma	<i>Clementia (Egesta) pertenuis</i> (Gabb)	<i>Clementia pertenuis</i> (Gabb)	Subgenus, 28N–0
23–5 Ma	<i>Clementia (Egesta) pertenuis</i> (Gabb)	<i>Venus pertenuis</i> Gabb	Subgenus, 28N–0
N.D.	<i>Clementia (Egesta) sp.</i>	<i>Clementia sp.</i>	Subgenus, 28N–0
N.D.	<i>Clementia (Egesta) sp.</i>	<i>Compsomyx sp.</i>	Subgenus, 28N–0
N.D.	<i>Clementia (Egesta) sp.</i>	<i>Clementia (Egesta) sp.</i>	Subgenus, 28N–0
N.D.	<i>Clementia (Egesta) sp.</i>	<i>Venus sp.</i>	Subgenus, 28N–0
13–8 Ma	<i>Clementia brioniana</i> (Trask)	<i>Venus brioniana</i> Trask	Genus, 28N–0
23–17 Ma	<i>Clementia dariena</i> (Conrad)	<i>Clementia dariena</i> (Conrad)	Genus, 30N–15 N, Florida and Gulf of Mexico–West Indies
N.D.	<i>Clementia sp.</i>	<i>Clementia sp.</i>	Genus, 28N–0
23–17 Ma	<i>Clementia? elongata</i> Wiedey	<i>Clementia (Egesta) elongata</i> Wiedey	Genus, 28N–0
5 Ma–H	<i>Clinocardium (Ciliatocardium) ciliatum</i> (Fabricius)	<i>Clinocardium comoxense</i> (Dall)	71–48.9N; 10 to 150 m
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Cardium (Clinocardium) nuttallii</i> Conrad	63.1N–32.7N, intertidal to 180 m, common in estuaries
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Cardium corbis</i> (Martyn) n. var.?	63.1N–32.7N
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Cardium corbis</i> Martyn	63.1N–32.7N
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Cardium corbis</i> Martyn	63.1N–32.7N
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Cerastoderma corbis</i> (Martyn)	63.1N–32.7N
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	63.1N–32.7N
13 Ma–H	<i>Clinocardium (Clinocardium) nuttallii</i> (Conrad)	<i>Laevicardium (Cerastoderma) cf. L. (C.) corbis</i> (Martyn)	63.1N–32.7N
5 Ma–H	<i>Clinocardium (Keenocardium) blandum</i> (Gould)	<i>Clinocardium blandum</i> (Gould)	57N–39N; 20 to 80 m
8–2.5 Ma	<i>Clinocardium coosense</i> (Dall)	<i>Cardium coosensis</i> Dall	Genus, 71N–33N; intertidal, in sand, to 150 m
8–2.5 Ma	<i>Clinocardium coosense</i> (Dall)	<i>Cardium (Cerastoderma) coosense</i> Dall	Genus, 71N–33N; estuaries and sheltered waterways
5–2.5 Ma	<i>Clinocardium lispum</i> Roth and Talmadge (Roth and Talmadge, 1975)	<i>Clinocardium lispum</i> Roth and Talmadge (Roth and Talmadge, 1975)	Genus, 71N–33N
8–2.5 Ma	<i>Clinocardium meekianum</i> (Gabb)	<i>Cardium (Cerastoderma) meekianum</i> Gabb	Genus, 71N–33N
8–2.5 Ma	<i>Clinocardium meekianum</i> (Gabb)	<i>Clinocardium meekianum</i> (Gabb)	Genus, 71N–33N
8–2.5 Ma	<i>Clinocardium meekianum</i> (Gabb)	<i>Laevicardium (Cerastoderma) meekianum</i> (Gabb)	Genus, 71N–33N
8–5 Ma	<i>Clinocardium meekianum</i> (Gabb) <i>myrae</i> Adegoke	<i>Clinocardium meekianum</i> (Gabb) <i>myrae</i> Adegoke	Genus, 71N–33N
13–8 Ma	<i>Clinocardium praeblandum</i> Keen	<i>Clinocardium praeblandum</i> Keen	Genus, 71N–33N; intertidal, in sand, to 180 m
13–8 Ma	<i>Clinocardium pristinum</i> Keen (Keen, 1954)	<i>Clinocardium pristinum</i> Keen	Genus, 71N–33N
N.D.	<i>Clinocardium sp.</i>	<i>Cardium sp.</i>	Genus, 71N–33N
N.D.	<i>Clinocardium sp.</i>	<i>Cerastoderma sp.</i>	Genus, 71N–33N
N.D.	<i>Clinocardium sp.</i>	<i>Clinocardium sp.</i>	Genus, 71N–33N
8–2.5 Ma	<i>Clinopegma cf. C. magna stantoni</i> (Arnold)	<i>Beringius cf. B. stantoni</i> (Arnold)	Genus, 60N–50N, Japan
8–2.5 Ma	<i>Clinopegma magna stantoni</i> (Arnold)	<i>Neptunea stantoni</i> (Arnold)	Genus, 60N–50N, Japan
8–2.5 Ma	<i>Clinopegma magna stantoni</i> (Arnold)	<i>Beringius stantoni</i> (Arnold)	Genus, 60N–50N, Japan
13–8? Ma	<i>Clypeaster bowersi</i> Weaver (Echinodermata)	<i>Clypeaster bowersi</i> Weaver (Echinodermata)	Genus, 23N–0, Gulf of California
13–8? Ma	<i>Clypeaster carrizensis</i> Kew	<i>Clypeaster carrizensis</i> Kew	Genus, 23N–0, Gulf of California
N.D.	<i>Clypeaster deserti</i> Kew	<i>Clypeaster deserti</i> Kew	Genus, 23N–0, Gulf of California

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23–17 Ma	<i>Cochiolepis? schoonerensis</i> Moore	<i>Cochiolepis? schoonerensis</i> Moore	29N–24N Atlantic; living under the scales of a large annelid worm
5 Ma–H	<i>Cockerella conradiana</i> (Gabb)	<i>Cockerella conradiana</i> (Gabb)	37N–5S
N.D.	<i>Codakia</i> sp.	<i>Phacoides (Codakia?)</i> n.sp.	Genus, 25N–1S
13 Ma–H	<i>Codakia (Codakia) distuguenda</i> (Tryon)	<i>Codakia (Codakia) distuguenda</i> (Tryon)	25N–9N; on tide flats at extreme low tide
13 Ma–H	<i>Codakia (Codakia) distuguenda</i> (Tryon)	<i>Codakia colpoica</i> Dall	25N–9N
13–8 Ma	<i>Codakia</i> sp. cf. <i>C. orbicularis</i> (Linnaeus) (Smith, 1989)	<i>Codakia (Codakia) distuguenda</i> (Tryon)	25N–9N
8? Ma–H	<i>Collisella</i> cf. <i>C. digitalis</i> (Rathke)	<i>Acmaea</i> cf. <i>A. digitalis</i> Eschscholtz	55N–19N; upper intertidal, splash zone
17? Ma–H	<i>Collisella</i> cf. <i>C. scabra</i> (Gould)	<i>Acmaea</i> cf. <i>A. scabra</i> (Gould)	48N–23N; intertidal, rocky “reefs”
N.D.	<i>Collisella</i> sp.	<i>Collisella</i> sp.	Genus, 34N–5N, through Gulf of California; intertidal
N.D.	<i>Columbella</i> sp.	<i>Pyrene</i> sp.	Genus, 33N–5S, through Gulf of California; intertidal, under rocks
8–2.5 Ma	<i>Colus (Aulacofusus)</i> cf. <i>C. (A.) recurvus</i> (Gabb)	<i>Neptunea (Colus)</i> cf. <i>N. (C.) recurva</i> (Gabb)	Genus, 72N–33N, deep water, 18 to 2013 m
8–2.5 Ma	<i>Colus (Aulacofusus) recurvus</i> (Gabb)	<i>Neptunea recurva</i> Gabb	Genus, 72N–33N, deep water
8–2.5 Ma	<i>Colus (Aulacofusus) recurvus</i> (Gabb)	<i>Colus recurvus</i> (Gabb)	Genus, 72N–33N, deep water
8–5 Ma	<i>Colus eurekaensis</i> (Martin)	<i>Chrysodomus eurekaensis</i> Martin	Genus, 72N–33N, deep water
8–5 Ma	<i>Colus eurekaensis</i> (Martin)	<i>Neptunea eurekaensis</i> (Martin)	Genus, 72N–33N, deep water
5 Ma–H	<i>Colus halibrectus</i> (Dall)	<i>Chrysodomus halibrectus</i> Dall	55N
5 Ma–H	<i>Colus halli</i> (Dall)	<i>Tritonofusus halli</i> Dall	60N–33N
N.D.	<i>Colus</i> sp.	<i>Anomalosiphon</i> sp.	Genus, 72N–33N, deep water
N.D.	<i>Colus</i> sp.	<i>Colus</i> sp. indent.	Genus, 72N–33N, deep water
23–17 Ma	<i>Comitas? spencerensis</i> Moore	<i>Comitas? spencerensis</i> Moore	Genus, medial Miocene, New Zealand
23–13 Ma	<i>Compsomyx angustifrons</i> (Conrad)	<i>Callista angustifrons</i> Conrad (apparently <i>Dione angustifrons</i> Conrad)	Genus, 61N–30N, in Gulf of California; 2 to 500 m
23–13 Ma	<i>Compsomyx angustifrons</i> (Conrad)	<i>Composmyx angustifrons</i> (Conrad)	Genus, 61N–30N, in Gulf of California
23–13 Ma	<i>Compsomyx angustifrons</i> (Conrad)	<i>Katherinella (Katherinella) angustifrons</i> (Conrad)	Genus, 61N–30N, in Gulf of California
8 Ma–H	<i>Compsomyx</i> cf. <i>C. subdiaphana</i> (Carpenter)	<i>Marcia angustifrons</i> (Conrad)	Genus, 61N–30N, in Gulf of California
N.D.	<i>Compsomyx</i> sp.	<i>Clementia (Compsomyx)</i> cf. <i>C. (C.) subdiaphana</i> Carpenter	60.8N–30.4N, in Gulf of California
N.D.	<i>Compsomyx</i> sp.	<i>Katherinella</i> sp.	Genus, 61N–30N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Compsomyx</i> sp.	Genus, 61N–30N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Callista subdiaphana</i> Carpenter	60.8N–30.4N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Compsomyx subdiaphana</i> (Carpenter)	60.8N–30.4N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Katherinella subdiaphana</i> (Carpenter)	60.8N–30.4N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Marcia subdiaphana</i> (Conrad)	60.8N–30.4N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Venerella (Compsomyx)</i> cf. <i>subdiaphana</i> (Carpenter)	60.8N–30.4N, in Gulf of California
8 Ma–H	<i>Compsomyx subdiaphana</i> (Carpenter)	<i>Venerella (Compsomyx) subdiaphana</i> (Conrad)	60.8N–30.4N, in Gulf of California
23 Ma–H	<i>Conchocele bisecta</i> (Conrad)	<i>Conchocele disjuncta</i> Gabb	57N–40.8N; 50 to 750 m, in mud
23 Ma–H	<i>Conchocele bisecta</i> (Conrad)	<i>Thyasira bisecta</i> Conrad	57N–41N
23 Ma–H	<i>Conchocele bisecta</i> (Conrad)	<i>Thyasira bisecta</i> (Conrad)	57N–41N
13? or 8 Ma–H	<i>Conus (Chelyconus) californicus</i> Reeve, ex Hinds	<i>Conus californicus</i> (Hinds)	38N–24N
13? or 8 Ma–H	<i>Conus (Chelyconus) californicus</i> Reeve, ex Hinds	<i>Conus californicus</i> Reeve	38N–24N; intertidal to 46 m
27–8 Ma	<i>Conus (Chelyconus) owenianus</i> Anderson	<i>Conus owenianus</i> Anderson	Subgenus, 38N–3S, Gulf of California; intertidal to 50 m

27–8 Ma 27–8 Ma 23? or 13 Ma–H 13? or 5–2.5 Ma	<i>Conus (Chelyconus) owenianus</i> Anderson <i>Conus (Chelyconus) owenianus</i> Anderson <i>Conus (Leptoconus)</i> cf. <i>C. (L.) regularis</i> Sowerby <i>Conus (Leptoconus) multiliratus walli</i> Mansfield	<i>Conus oweniana</i> Anderson <i>Conus (Chelyconus) owenianus</i> Anderson <i>Conus (Lithoconus)</i> cf. <i>C. (L.) regularis</i> Sowerby <i>Conus (Leptoconus) multiliratus walli</i> Mansfield	Subgenus, 38N–3S, Gulf of California Subgenus, 38N–3S, Gulf of California 25N–5S, through Gulf of California; intertidal to 90 m Subgenus, 28N–5S, through Gulf of California; intertidal to 145 m 25N–5N; offshore at depths of 35 to 145 m 25N–5S, through Gulf of California Subgenus, 28N–3S, Gulf of California; intertidal to 165 m 28N–3S, through Gulf of California; intertidal to 165 m Subgenus, 28N–3S, Gulf of California Subgenus, 28N–3S, Gulf of California Genus, 38N–south of equator
5 Ma–H 23? or 13 Ma–H 23–13 Ma	<i>Conus (Leptoconus) recurvus</i> Broderip <i>Conus (Leptoconus) regularis</i> Sowerby <i>Conus (Lithoconus)</i> cf. <i>C. (L.) hayesi</i> Arnold	<i>Conus</i> aff. <i>C. recurvus</i> Broderip <i>Conus regularis</i> Sowerby <i>Conus</i> cf. <i>C. fergusonii</i> Sowerby	25N–5N; offshore at depths of 35 to 145 m 25N–5S, through Gulf of California Subgenus, 28N–3S, Gulf of California; intertidal to 165 m 28N–3S, through Gulf of California; intertidal to 165 m Subgenus, 28N–3S, Gulf of California Subgenus, 28N–3S, Gulf of California Genus, 38N–south of equator
13 Ma–H 23–13 Ma 23–13 Ma 13–8 Ma	<i>Conus (Lithoconus) fergusonii</i> Sowerby <i>Conus (Lithoconus) hayesi</i> Arnold <i>Conus (Lithoconus) haysei</i> Arnold <i>Conus bramkampii</i> Hanna and Strong (Hanna and Strong, 1949)	<i>Conus fergusonii</i> Sowerby <i>Conus (Lithoconus) hayesi</i> Arnold <i>Conus haysei</i> Arnold <i>Conus bramkampii</i> Hanna and Strong	28N–3S, through Gulf of California; intertidal to 165 m Subgenus, 28N–3S, Gulf of California Subgenus, 28N–3S, Gulf of California Genus, 38N–south of equator
13–8 Ma	<i>Conus durhami</i> Hanna and Strong (Hanna and Strong, 1949)	<i>Conus durhami</i> Hanna and Strong	Genus, 38N–south of equator
13? Ma–H	<i>Conus</i> n.sp.? cf. <i>C. purperascens</i> Sowerby	<i>Conus</i> n.sp.? cf. <i>C. purperascens</i> Sowerby	25N–3S, through Gulf of California; tide pools and rocky ledges
13 Ma–H	<i>Conus planiliratus</i> Sowerby	<i>Conus planiliratus</i> Sowerby	Genus, 38N–south of equator eastern Pacific; species, 24N Florida
N.D. 13–8 Ma N.D.	<i>Conus</i> sp. <i>Conus spurius</i> Gmelin (Smith, 1989) <i>Corbula (Bicorbula?)</i> n.sp. Powell	<i>Conus</i> sp. <i>Conus spurius</i> Gmelin <i>Corbula (Bicorbula?)</i> n.sp. Powell	Genus, 38N–south of equator Genus, 38N–south of equator Genus, 37N–14S; intertidal to 73 m, among rock rubble
13? or 5–2.5 Ma N.D. 5 Ma–H	<i>Corbula (Caryocorbula) oreopendula</i> Olsson <i>Corbula (Caryocorbula)</i> sp. <i>Corbula (Tenuicorbula) tenuis</i> Sowerby	<i>Corbula (Caryocorbula) oreopendula</i> Olsson <i>Corbula (Caryocorbula)</i> n.sp. <i>Corbula tenuis</i> Moody	Subgenus, 37N–14S Subgenus, 37N–14S 8N–3S; not reported outside Panama area (Keen, 1971, p. 268)
8–2.5 Ma 8–2.5 Ma 8–2.5 Ma 13? or 5 Ma–H N.D. N.D. N.D. 5 Ma–H 13–8 Ma	<i>Corbula (Varicorbula) gibbiformis</i> Grant and Gale <i>Corbula (Varicorbula) gibbiformis</i> Grant and Gale <i>Corbula (Varicorbula) gibbiformis</i> Grant and Gale <i>Corbula (Varicorbula) speciosa</i> Reeve <i>Corbula</i> sp. <i>Corbula?</i> sp. <i>Cosmioconcha</i> n.sp. <i>Cranopsis cucullata</i> (Gould) (McLean, 1996) <i>Crassadomo benedicti</i> (Adegoke) 13–8 Ma	<i>Corbula gibbiformis</i> Grant and Gale <i>Corbula (Varicorbula) gibbiformis</i> Grant and Gale <i>Corbula (Corbula) gibbiformis</i> Grant and Gale <i>Corbula (Varicorbula) speciosa</i> Reeve <i>Corbula</i> sp. <i>Corbis</i> n.sp.? <i>Cosmioconcha</i> n.sp. <i>Puncturella cucullata</i> (Gould) <i>Hinnites multirugosus</i> (Gale) <i>benedicti</i> Adegoke	Subgenus, 27N–3N, through Gulf of California Subgenus, 27N–3N, through Gulf of California Subgenus, 27N–3N, through Gulf of California 27N Gulf of California–7N Genus, 37N–14S Genus, 37N–14S Genus, 24N–south of equator; intertidal to 205 m 58N–23N Genus, 60.2N–24.6N; low tide to 80 m, high latitudes close to shore
13–8 Ma 27 Ma–H	<i>Crassadomo benedicti</i> (Adegoke) 13–8 Ma <i>Crassadomo</i> cf. <i>C. giganteus</i> (Gray)	<i>Hinnites benedicti</i> Adegoke <i>Hinnites</i> cf. <i>H. crassa</i> (Conrad)	Genus, 60N–25N 60N–25N, Gulf of California; intertidal to 80 m, common 6 to 10 m
27 Ma–H 27 Ma–H 27 Ma–H 27 Ma–H 27 Ma–H 27 Ma–H 27 Ma–H 27 Ma–H 27 Ma–H N.D. 8–5 Ma	<i>Crassadomo</i> cf. <i>C. giganteus</i> (Gray) <i>Crassadomo</i> cf. <i>C. giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo giganteus</i> (Gray) <i>Crassadomo</i> sp. <i>Crassatella collina</i> (Conrad)?	<i>Hinnites</i> cf. <i>H. crassa</i> Conrad <i>Hinnites</i> cf. <i>H. giganteus</i> (Gray) <i>Chlamys (Hinnites) multirugosus</i> (Gale) <i>Hinnites giganteus</i> (Gray) <i>Hinnites multirugosus crassiplicatus</i> (Gale) <i>Hinnites multirugosus</i> var. <i>crassiplicatus</i> (Gale) <i>Hinnites?</i> cf. <i>H. giganteus</i> (Gray) <i>Pecten (Hinnites) giganteus</i> Gray <i>Hinnites</i> sp. <i>Crassatella collina</i> Conrad?	60N–25N 60N–25N 60N–25N 60N–25N 60N–25N 60N–25N 60N–25N 60N–25N 60N–25N Genus, 60N–25N Questionable generic assignment; Eocene species

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
17 Ma–H	<i>Crassinella</i> cf. <i>C. pacifica</i> (Adams)	<i>Crassinella</i> cf. <i>C. mexicana</i> Pilsbry and Lowe	34N–1S
13? or 5 Ma–H	<i>Crassinella</i> n.sp.? aff. <i>C. adamsi</i> Olsson	<i>Crassinella</i> n.sp.? aff. <i>C. adamsi</i> Olsson	23N–3S
17 Ma–H	<i>Crassinella pacifica</i> (Adams)	<i>Crassinella mexicana</i> Pilbry and Lowe	34N–1S
17 Ma–H	<i>Crassinella pacifica</i> (Adams)	<i>Crassinella branneri</i> Arnold	33.9N–1S, through Gulf of California; intertidal to 160 m
17 Ma–H	<i>Crassinella pacifica</i> (Adams)	<i>Crassinella pacifica mexicana</i> Pilbry and Lowe	34N–1S
13? or 5 Ma–H	<i>Crassinella virians</i> (Carpenter)	<i>Crassinella virians</i> (Carpenter)	28N–3S
5–2.5? Ma	<i>Crassispira zizyphus</i> (Berry)	<i>Crassispira zizyphus</i> (Berry)	Genus, 37N–3S
8? Ma–H	<i>Crassispira</i> aff. <i>C. montereyensis</i> (Steams)	<i>Crassispira</i> aff. <i>C. montereyensis</i> (Steams)	37N–23N
N.D.	<i>Crassispira</i> n.sp. Powell	<i>Crassispira</i> n.sp. Powell	Genus, 37N–3S; on sand, rocks, and under kelp, 17 to 65 m
8? Ma–H	<i>Crassispira</i> n.sp.? aff. <i>C. martinensis</i> Dall	<i>Pseudomelatomina</i> n.sp.? aff. <i>P. grippi</i> (Dall) (see Keen, 1971, p. 907)	34N–30N, uncommon on rocky bottoms under kelp
17–13 Ma	<i>Crassispira olcesensis</i> Addicott	<i>Crassispira olcesensis</i> Addicott	Genus, 37N–3S
5–2.5 Ma	<i>Crassispira semiinflata</i> (Grant and Gale)	<i>Crassispira semiinflata</i> (Grant and Gale)	Genus, 37N–3S; also, 34N–32N of authors
N.D.	<i>Crassispira</i> sp.	<i>Crassispira</i> sp.	Genus, 37N–3S
13 Ma–H	<i>Crassostrea columbiensis</i> (Hanley)	<i>Ostrea californica</i> Marcou	28N–5S; intertidal, attached to rocks or mangroves
13 Ma–H	<i>Crassostrea columbiensis</i> (Hanley)	<i>Ostrea iridescens</i> Gray	28N–5S
N.D.	<i>Crassostrea</i> sp.	<i>Crassostrea</i> sp.	Genus, 60N–5S
N.D.	<i>Crassostrea</i> sp.	<i>Ostrea</i> sp.	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Crassostrea titan</i> (Conrad)	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Crassostrea titan prior</i> (Grant and Eaton)	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea ligminuta</i> Grant and Eaton	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea panzana</i> Conrad	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea titan</i> Conrad	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea titan</i> Conrad <i>andersoni</i> Adegoke	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea titan prior</i> Grant and Eaton	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea titan</i> s.s. Conrad	Genus, 60N–5S
23–5 Ma	<i>Crassostrea titan</i> (Conrad)	<i>Ostrea titan?</i> Conrad	Genus, 60N–5S
23–8 Ma	<i>Crassostrea? ashleyi</i> (Hertlein)	<i>Crassostrea ashleyi</i> (Hertlein)	Genus, 60N–5S
23–8 Ma	<i>Crassostrea? ashleyi</i> (Hertlein)	<i>Ostrea altatemblorensis</i> Grant and Eaton	Genus, 60N–5S
23–8 Ma	<i>Crassostrea? ashleyi</i> (Hertlein)	<i>Ostrea arnoldi</i> Adegoke	Genus, 60N–5S
23–8 Ma	<i>Crassostrea? ashleyi</i> (Hertlein)	<i>Ostrea ashleyi</i> Hertlein	Genus, 60N–5S
23–8 Ma	<i>Crassostrea? ashleyi</i> (Hertlein)	<i>Ostrea hertleini</i> Adegoke	Genus, 60N–5S
27–17 or 13? Ma	<i>Crassostrea? engleknyi</i> Hertlein	<i>Ostrea engleknyi</i> Hertlein	Genus, 60N–5S
13 Ma–H	<i>Crassostrea? eucorugata</i> (Hertlein)	<i>Crassostrea cierboensis</i> (Grant and Eaton)	Genus, 60N–5S
13 Ma–H	<i>Crassostrea? eucorugata</i> (Hertlein)	<i>Crassostrea eucorugata</i> (Hertlein)	Genus, 60N–5S
13 Ma–H	<i>Crassostrea? eucorugata</i> (Hertlein)	<i>Ostrea cierboensis</i> Grant and Eaton	Genus, 60N–5S
13 Ma–H	<i>Crassostrea? eucorugata</i> (Hertlein)	<i>Ostrea eucorugata</i> Hertlein	Genus, 60N–5S
8–5 Ma	<i>Crassostrea? eucorugata</i> (Hertlein)	<i>Ostrea titan corrugata</i> Nomland	Genus, 60N–5S
8–5 Ma	<i>Crassostrea? eucorugata</i> (Hertlein)	<i>Ostrea titan</i> var. <i>eucorugata</i> Hertlein	Genus, 60N–5S
27–23 or to 13? Ma	<i>Crassostrea? vaquerosensis</i> (Loel and Corey)	<i>Crassostrea vaquerosensis</i> (Loel and Corey)	Genus, 60N–5S
27–23 or to 13? Ma	<i>Crassostrea? vaquerosensis</i> (Loel and Corey)	<i>Ostrea vaquerosensis</i> Loel and Corey	Genus, 60N–5S
23–17 Ma	<i>Crenella</i> cf. <i>C. porterensis</i> Weaver	<i>Crenella</i> cf. <i>C. porterensis</i> Weaver	Genus, 71N–4S; intertidal to 458 m
5 Ma–H	<i>Crenella decussata</i> (Montagu)	<i>Crenella decussata</i> (Montagu)	71N–3.5S; intertidal to 200 m
13 Ma–H	<i>Crenella divaricata</i> (d'Orbigny)	<i>Crenella inflata</i> Carpenter	34N–2S; 4 to 450 m

13 Ma–H N.D. 8? or 5 Ma–H	<i>Crenella divaricata</i> (d'Orbigny) <i>Crenella</i> sp. <i>Crepidula aculeata</i> (Gmelin)	<i>Crenella inflata</i> (Carpenter) <i>Crenella</i> sp. <i>Crepidula aculeata</i> (Gmelin)	34N–2S Genus, 71N–4S; intertidal to 458 m 34N–34S, through Gulf of California; intertidal, on rocks or shells 48N–23N; on gastropod shells, protected outer coasts, intertidal
13 Ma–H	<i>Crepidula adunca</i> Sowerby	<i>Crepidula adunca</i> Sowerby	Genus, 72N–5S; intertidal to 168 m 34N–34S, through Gulf of California; sublittoral zone 37N–8N; on other shells, especially <i>Polinices</i> spp. Genus, 72N–5S
17–13 Ma 17–5 Ma 5 Ma–H 27–23 Ma 8 Ma–H 8 Ma–H 13 Ma–H 13–8 Ma 5 Ma–H 27–2.5 Ma 27–2.5 Ma	<i>Crepidula bractea</i> Addicott <i>Crepidula</i> cf. <i>C. aculeata</i> (Gmelin) <i>Crepidula</i> cf. <i>C. excavata</i> Sowerby <i>Crepidula diminutiva</i> Loel and Corey <i>Crepidula nummaria</i> Gould <i>Crepidula nummaria</i> Gould <i>Crepidula onyx</i> Sowerby <i>Crepidula pabloensis</i> Clark <i>Crepidula perforans</i> Valenciennes <i>Crepidula princeps</i> Conrad <i>Crepidula princeps</i> Conrad (following Hoagland [1977] = <i>C. praeupta</i>)	<i>Crepidula bractea</i> Addicott <i>Crepidula</i> cf. <i>C. aculeata</i> (Gmelin) <i>Crepidula</i> cf. <i>C. excavata</i> Sowerby <i>Crepidula diminutiva</i> Loel and Corey <i>Crepidula navicelloides</i> Nuttall <i>Crepidula nummaria</i> Gould <i>Crepidula onyx</i> Sowerby <i>Crepidula pabloensis</i> Clark <i>Crepidula perforans</i> Valenciennes <i>Crepidula</i> cf. <i>C. praeupta</i> Conrad <i>Crepidula princeps</i> Conrad	65N–23N 65N–23N 34N–3S; bays and lagoons, intertidal to 70 m Genus, 72N–5S; intertidal to 168 m 65N–23N (?) Genus, 72N–5S Genus, 72N–5S
23–8 Ma 23–8 Ma 23–8 Ma N.D. N.D. 5 Ma–H	<i>Crepidula rostralis</i> (Conrad) <i>Crepidula rostralis</i> (Conrad) <i>Crepidula rostralis</i> (Conrad) <i>Crepidula</i> sp. <i>Crepidula</i> sp. <i>Crepidipatella</i> cf. <i>C. dorsata</i> (Broderip) (McLean, 1996)	<i>Crepidula praeupta</i> Conrad <i>Crepidula rostralis</i> Conrad <i>Crepidula rostrata</i> Conrad <i>Ianacus?</i> sp. <i>Crepidula</i> sp. <i>Crepidipatella</i> cf. <i>C. lingulata</i> (Gould)	Genus, 72N–5S Genus, 72N–5S Genus, 72N–5S Genus, 72N–5S Genus, 72N–5S 60N–8N; genus, intertidal to 180 m, on rocks
17 Ma–H	<i>Crucibulum</i> (<i>Crucibulum</i>) cf. <i>C. (C.) scutellatum</i> (Wood)	<i>Crucibulum?</i> cf. <i>C. imbricatum</i> (Sowerby)	28N–3S, through Gulf of California; intertidal mudflats to offshore 27 m
17 Ma–H	<i>Crucibulum</i> (<i>Crucibulum</i>) cf. <i>C. (C.) scutellatum</i> (Wood)	<i>Crucibulum</i> cf. <i>C. scutellatum</i> (Wood)	28N–3S, through Gulf of California
N.D. 17–13 Ma N.D. N.D.	<i>Crucibulum</i> (<i>Crucibulum</i>) sp. <i>Crucibulum</i> (<i>Dispotaea</i>) <i>papulum</i> Addicott <i>Crucibulum</i> sp. <i>Crucibulum</i> sp.?	<i>Crucibulum</i> sp. <i>Crucibulum</i> (<i>Dispotaea</i>) <i>papulum</i> Addicott <i>Crucibulum</i> (<i>Disptaea</i>) n.sp. <i>Crucibulum</i> (<i>Disptaea</i>) n.sp.	Subgenus, 28N–Chile, through Gulf of California Subgenus, 24N–3S Genus, 42N–6S or Chile Genus, 42N–6S or Chile; intertidal mudflats, on rocks to 55 m
23? or 13 Ma–H	<i>Crucibulum spinosum</i> (Sowerby)	<i>Crucibulum spinosum</i> Sowerby	42N–Chile; intertidal, rocks and shells; offshore to 55 m
13 Ma–H	<i>Cryptomya californica</i> (Conrad)	<i>Cryptomya californica</i> (Conrad)	59.5N–5.8S; burrowing in sand, associated with <i>Callianassa</i>
13 Ma–H	<i>Cryptomya californica</i> (Conrad)	<i>Cryptomya californica magna</i> Dall	60N–6S; common in bays and sublittoral zone of open coast
13 Ma–H 13 Ma–H 13 Ma–H 13 Ma–H 13 Ma–H 13 Ma–H N.D. 13? or 5–2.5 Ma	<i>Cryptomya californica</i> (Conrad) <i>Cryptomya californica</i> (Conrad) <i>Cryptomya californica</i> (Conrad) <i>Cryptomya californica</i> (Conrad) <i>Cryptomya californica</i> (Conrad) <i>Cryptomya californica</i> (Conrad) <i>Cryptomya californica</i> (Conrad) <i>Cryptopleura</i> (<i>Scobinopholas</i>) <i>costata</i> (Linnaeus)	<i>Cryptomya ovalis</i> Conrad <i>Cryptomya quadrata</i> Arnold <i>Cryptomya quadrata</i> Carpenter <i>Macoma kerica</i> Hendrickson <i>Mya</i> (<i>Cryptomya</i>) <i>ovalis</i> Conrad <i>Mya ovalis</i> (Conrad) <i>Cryptomya</i> sp. <i>Barnea costata</i> Linnaeus	60N–6S; intertidal to 80 m 60N–6S 60N–6S 60N–6S 60N–6S 60N–6S 60N–6S Genus, 60N–6S; intertidal to 80 or 92 m Genus, 28N–4S, Pacific; species, 42N–24N, Atlantic; mud
N.D. 13 Ma–H	<i>Ctena</i> n.sp. Powell <i>Ctenoides floridana</i> Olsson and Harbison	<i>Ctena</i> n.sp. Powell <i>Ctenoides floridana</i> Olsson and Harbison	Genus, 31N–2S; intertidal to 120 m Genus, 35N–15N Atlantic; deep water, e.g., 220 m
8 Ma–H	<i>Cumingia californica</i> Conrad	<i>Cumingia californica</i> Conrad	41.8N–26.3N; intertidal to 65 m, in rock crevices and gravel
8 Ma–H	<i>Cumingia californica</i> Conrad	<i>Cumingia californica</i> Conrad? 42N–26N	

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
N.D.	<i>Cumingia</i> sp.	<i>Cumingia</i> sp.	Genus, 37N–3S
N.D.	<i>Cyathodonta</i> sp.	<i>Cyathodonta</i> sp.	Genus, 37N–4S; 25 m to 73 m
13? or 5 Ma–H	<i>Cyathodonta undulata</i> (Conrad)	<i>Cyathodonta undulata</i> (Conrad)	31N–4S; 3 m to 110 m
13? or 5 Ma–H	<i>Cyathodonta undulata</i> (Conrad)	<i>Cyathodonta undulata</i> Conrad	31N–4S
13? or 5 Ma–H	<i>Cyclinella cyclica</i> (Guppy)	<i>Cyclinella cyclica</i> (Guppy)	Genus, 27N–9S, Pacific; species, 35N–15N, Atlantic; to 30 m
8 Ma–H	<i>Cyclocardia</i> aff. <i>C. barbarensis</i> (Stearns)	<i>Cyclocardia</i> aff. <i>C. barbarensis</i> (Stearns)	33.5N; 350 to 2211 m
17–8 Ma	<i>Cyclocardia montereyana</i> (Arnold)	<i>Venericardia montereyana</i> Arnold	Genus, 71N–9N; 180 to 1800 m
17–8 Ma	<i>Cyclocardia montereyana</i> (Arnold)	<i>Cyclocardia montereyana</i> Arnold	Genus, 71N–9N
N.D.	<i>Cyclocardia</i> sp.	<i>Cardita</i> sp.	Genus, 71N–9N and 46S–20S
N.D.	<i>Cyclocardia</i> sp.	<i>Cyclocardia</i> sp.	Genus, 71N–9N and 46S–20S; subgenus of <i>Cardita</i> (Keen, 1971)
23–17 Ma	<i>Cyclocardia subtenta</i> (Conrad)	<i>Cyclocardia subtenta</i> (Conrad)	Genus, 71N–9N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Cardita (Cyclocardia) californica</i> (Dall)	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Cardita californica</i> (Dall)	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Cardita ventricosa</i> Gould?	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Cyclocardia californica</i> (Dall)	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Cyclocardia ventricosa</i> (Gould)	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Cyclocardia ventricosa</i> Gould	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Venericardia castor</i> Dall	61N–28N
8 Ma–H	<i>Cyclocardia ventricosa</i> (Gould)	<i>Venericardia ventricosa</i> Gould	61N–28N
N.D.	<i>Cyclocardia?</i> sp.	<i>Cyclocardia?</i> sp.	Genus, 58N–9N
13? or 5 Ma–H	<i>Cyclopecten pernomus</i> (Hertlein) 5 Ma– Holocene	<i>Cyclopecten pernomus</i> (Hertlein)	28N–3S, through Gulf of California; to depths of 355 m
5 Ma–H	<i>Cylichna alba</i> (Brown)	<i>Cylichna alba</i> Brown	71N–32N (Keen, 1937, p. 34)
5 Ma–H	<i>Cylichna</i> cf. <i>C. attonsa</i> Carpenter	<i>Cylichna</i> cf. <i>C. attonsa</i> Carpenter	48N–32N (Palmer, 1958, p. 242, see discussion)
N.D.	<i>Cylichna</i> sp.	<i>Cylichna</i> sp.	Genus, 72N–3N, Gulf of California
27–23 Ma	<i>Cylichna</i> sp. (see Addicott, 1970a, p. 140; and <i>C.</i> <i>alba</i> [Brown])	<i>Cylichna</i> aff. <i>alba</i> (Brown) n.sp.?	Genus, 72N–3N, Gulf of California
23–13 Ma	<i>Cylichna temblorensis</i> Keen (see Addicott, 1970a, p. 140)	? <i>Cylichna</i> sp. (Moore, 1963, p. 50)	Genus, 72N–3N, Gulf of California
23–13 Ma	<i>Cylichna temblorensis</i> Keen (see Addicott, 1970a, p. 140)	<i>Cylichna</i> n.sp. (in Loel and Corey, 1932)	Genus, 72N–3N, Gulf of California
23–13 Ma	<i>Cylichna temblorensis</i> Keen (see Addicott, 1970a, p. 140)	<i>Cylichna petrosa</i> Conrad	Genus, 72N–3N, Gulf of California
23–13 Ma	<i>Cylichna temblorensis</i> Keen (see Addicott, 1970a, p. 140)	<i>Cylichna petrosa</i> Conrad (of Etherington, 1931)	Genus, 72N–3N, Gulf of California
23–13 Ma	<i>Cylichna temblorensis</i> Keen (see Addicott, 1970a, p. 140)	<i>Cylichna temblorensis</i> Keen	Genus, 72N–3N, Gulf of California
23–13 Ma	<i>Cylichna temblorensis</i> Keen (see Addicott, 1970a, p. 140)	<i>Haminoea petrosa</i> Conrad	Genus, 72N–3N, Gulf of California
17–13 Ma	<i>Cylichna?</i> <i>loismartinae</i> Keen	<i>Cylichna?</i> <i>loismartinae</i> Keen	Genus, 72N–3N, Gulf of California; shallow bays to 2320 m
23–17 Ma	<i>Cylichna petrosa</i> Conrad (see Addicott, 1970a, p. 140)	<i>Liracassis petrosa</i> (Conrad)	Genus not living
5 Ma–H	<i>Cymakra gracilior</i> (Tryon)	<i>Cymakra gracilior</i> (Tryon)	37N–30N
N.D.	<i>Cymatium</i> n.sp. Addicott	<i>Cymatium</i> n.sp. Addicott	Genus, 34N–5S; beach to 100 m
23–17 Ma	<i>Cymia heimi</i> Hertlein and Jordan	<i>Cymia heimi</i> Hertlein and Jordan	Genus, 10N–3S; on rocks between tides
13? or 5 Ma–H	<i>Cyrtopleura (Scobinopholas) costata</i> (Linnaeus)	<i>Cyrtopleura (Scobinopholas) costata</i> Linnaeus	Genus, 28N–4S, Pacific; species, 42N–24 N, Atlantic

N.D.	<i>Daphnella</i> sp.	<i>Daphnella</i> sp.	Genus, 25N–3S, though Gulf of California; 20 to 200 m
8–2.5 Ma	<i>Delectopecten</i> aff. <i>D. vancouverensis</i> <i>tillamookensis</i> (Arnold) 8–2.5 Ma	<i>Hyalopecten</i> aff. <i>H. randolphi tillamookensis</i> (Arnold)	Species, 60N–27N; 25 to 2000 m
8–2.5 Ma	<i>Delectopecten</i> aff. <i>D. vancouverensis</i> <i>tillamookensis</i> (Arnold) 8–2.5 Ma	<i>Delectopecten</i> aff. <i>D. randolphi tillamookensis</i> (Arnold)	Species, 60N–27N
32–8 Ma	<i>Delectopecten</i> cf. <i>D. peckhami</i> (Gabb) 32–8 Ma	<i>Delectopecten</i> cf. <i>D. peckhami</i> (Gabb)	Genus, 60N–27N; 25 to 2000 m
32–8 Ma	<i>Delectopecten</i> cf. <i>D. peckhami</i> (Gabb) 32–8 Ma	<i>Delectopecten</i> cf. <i>D. peckhami</i> (Trask)	Genus, 60N–27N
32–8 Ma	<i>Delectopecten</i> cf. <i>D. peckhami</i> (Gabb) 32–8 Ma	<i>Pecten</i> cf. <i>P. peckhami</i> Gabb	Genus, 60N–27N
5 Ma–H	<i>Delectopecten</i> cf. <i>D. vancouverensis</i> (Whiteaves) 5 Ma–Holocene	<i>Delectopecten</i> cf. <i>D. randolphi</i> (Dall)	60N–27 N; 25 to 2000 m
5 Ma–H	<i>Delectopecten</i> cf. <i>D. vancouverensis</i> (Whiteaves) 5 Ma–Holocene	<i>Cyclopecten</i> (<i>Delectopecten</i>) cf. <i>C. (D.) randolphi</i> (Dall)	60N–27N
17–13 Ma	<i>Delectopecten harfordus</i> (Davis) 17–13 Ma	<i>Delectopecten harfordus</i> (Davis)	Genus, 60N–27N
32–8 Ma	<i>Delectopecten peckhami</i> (Gabb) 32–8 Ma	<i>Delectopecten peckhami</i> (Gabb) of Arnold	Genus, 60N–27N
32–8 Ma	<i>Delectopecten peckhami</i> (Gabb) 32–8 Ma	<i>Pecten peckhami</i> Gabb	Genus, 60N–27N
32–8 Ma	<i>Delectopecten peckhami</i> (Gabb) 32–8 Ma	<i>Pecten</i> (<i>Pseudamusium</i>) <i>peckhami</i> Gabb	Genus, 60N–27N
32–8 Ma	<i>Delectopecten peckhami</i> (Gabb) of Arnold 32–8 Ma	<i>Pecten</i> (<i>Delectopecten</i>) <i>peckhami</i> Gabb	Genus, 60N–27N
13–2.5 Ma	<i>Delectopecten pedroanus</i> (Trask)	<i>Delectopecten pedroanus</i> (Trask)	<i>nomen dubium</i> , genus, 60N–27N
13–2.5 Ma	<i>Delectopecten pedroanus</i> (Trask)	<i>Pecten pedroanus</i> (Trask)	<i>nomen dubium</i> ; genus, 60N–27N
N.D.	<i>Delectopecten</i> sp.	<i>Pecten</i> (<i>Amusium</i>) sp.	Genus, 60N–27N
5–2.5 Ma	<i>Delectopecten vancouverensis fernandoensis</i> (Hertlein)	<i>Pecten pedroanus</i> Trask	Species, 60N–27N
8–2.5 Ma	<i>Delectopecten vancouverensis tillamookensis</i> (Arnold) 8–2.5 Ma	<i>Delectopecten randolphi tillamookensis</i> (Arnold)	Species, 60N–27N; 25 to 2000 m
13 Ma–H	<i>Dendostrea folium</i> (Linnaeus)	<i>Dendostrea folium</i> (Linnaeus)	Indo-Pacific
23–2.5 Ma	<i>Dendostrea? vespertina</i> (Conrad)	<i>Dendostrea? vespertina</i> (Conrad)	Genus, tropical and partly tropical (Moore, 1987, p. C25)
23–2.5 Ma	<i>Dendostrea? vespertina</i> (Conrad)	<i>Ostrea vespertina</i> Conrad	Genus, tropical and partly tropical (Moore, 1987, p. C25)
23–2.5 Ma	<i>Dendostrea? vespertina</i> (Conrad)	<i>Ostrea vespertina</i> Conrad <i>sequeris</i> Arnold	Genus, tropical and partly tropical (Moore, 1987, p. C25)
23–2.5 Ma	<i>Dendostrea? vespertina</i> (Conrad)	<i>Ostrea vespertina sequens</i> Arnold	Genus, tropical and partly tropical (Moore, 1987, p. C25)
8–5 Ma	<i>Dendraster arnoldi</i> Twitchell (Echinodermata)	<i>Dendraster arnoldi</i> Twitchell (Echinodermata)	Genus, 54N–23N; sandflats of bays and estuaries
8–2.5 Ma	<i>Dendraster ashleyi</i> (Arnold)	<i>Dendraster ashleyi</i> Arnold	Genus, 54N–23N
5–2.5 Ma	<i>Dendraster ashleyi ynezensis</i> Kew	<i>Dendraster ashleyi ynezensis</i> Kew	Genus, 54N–23N
5–2.5 Ma	<i>Dendraster casseli</i> Grant and Gale	<i>Dendraster casseli</i> Grant and Gale	Genus, 54N–23N
8–2.5 Ma	<i>Dendraster cedrosensis</i> Israelsky	<i>Dendraster cedrosensis</i> Israelsky	Genus, 54N–23N
8–5 Ma	<i>Dendraster</i> cf. <i>D. viscainoensis</i> Grant and Hertlein	<i>Dendraster</i> cf. <i>D. viscainoensis</i> Grant and Hertlein	Genus, 54N–23N
8–5 Ma	<i>Dendraster coalingaensis macer</i> Stewart	<i>Dendraster coalingaensis macer</i> Stewart	Genus, 54N–23N
8–2.5 Ma	<i>Dendraster coalingaensis</i> Twitchell	<i>Dendraster coalingaensis</i> Twitchell	Genus, 54N–23N
5–2.5 Ma	<i>Dendraster coalingensis gibbosus</i> Kew	<i>Dendraster coalingensis gibbosus</i> Kew?	Genus, 54N–23N
5–2.5 Ma	<i>Dendraster diegoensis</i> Kew	<i>Dendraster diegoensis</i> Kew?	Genus, 54N–23N
8–5 Ma	<i>Dendraster elsmerensis</i> Durham	<i>Dendraster elsmerensis</i> Durham	Genus, 54N–23N
5 Ma–H	<i>Dendraster excentricus</i> (Eschscholtz)	<i>Echinarachnius excentricus</i> Eschscholtz	54N–23N; low intertidal zone of rocky shores, bays, and estuaries
5 Ma–H	<i>Dendraster excentricus</i> (Eschscholtz)	<i>Dendraster excentricus</i> (Eschscholtz)	54N–23N
8–2.5 Ma	<i>Dendraster gibbsii</i> (Rémond)	<i>Dendraster gibbsii</i> (Rémond)	Genus, 54N–23N
8–2.5 Ma	<i>Dendraster gibbsii</i> (Rémond)	<i>Dendraster gibbsii humilis</i> Kew	Genus, 54N–23N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
8–2.5 Ma	<i>Dendraster gibbsii humilis</i> Kew	<i>Echinarachnius gibbsii</i> Rémond	Genus, 54N–23N
8–5 Ma	<i>Dendraster gibbsii mirus</i> Stewart	<i>Dendraster gibbsii mirus</i> Stewart	Genus, 54N–23N
8–5 Ma	<i>Dendraster pentagonalis</i> Israelsky	<i>Dendraster pentagonalis</i> Israelsky	Genus, 54N–23N
N.D.	<i>Dendraster</i> sp.	<i>Dendraster</i> sp.	Genus, 54N–23N
5–2.5 Ma	<i>Dendrophyllia</i> cf. <i>D. oldroydi</i> Faustino (Cnidaria)	<i>Dendrophyllia</i> cf. <i>D. oldroydi</i> Faustino (Cnidaria)	Genus, 33N
N.D.	<i>Dendrophyllia</i> sp.	<i>Dendrophyllia</i> sp.	Genus, 33N–cosmopolitan
23–17 Ma	<i>Dentalium</i> (<i>Dentalium</i> ?) <i>pseudonyma</i> Pilsbry and Sharp (Scaphopoda)	<i>Dentalium</i> (<i>Dentalium</i> ?) <i>pseudonyma</i> Pilsbry and Sharp (Scaphopoda)	Genus, 57N–3S; 9 to 1190 m
23–17 Ma	<i>Dentalium</i> (<i>Rhabdus</i>) <i>schlencki</i> Moore	<i>Dentalium</i> (<i>Rhabdus</i>) <i>schlencki</i> Moore	Genus, 57N–3S
5 Ma–H	<i>Dentalium</i> cf. <i>D. pretiosum</i> Nuttall	<i>Dentalium</i> cf. <i>D. pretiosum</i> Nuttall	57N–28N
8 Ma–H	<i>Dentalium</i> cf. <i>D. rectius</i> Carpenter	<i>Dentalium</i> cf. <i>D. rectius</i> Carpenter	56N–8N
5 Ma–H	<i>Dentalium</i> cf. <i>D. semipolitum</i> Broderip and Sowerby	<i>Dentalium</i> cf. <i>D. semipolitum</i> Broderip and Sowerby	34N–10N, through Gulf of California; 2 to 45 m
23–17 Ma	<i>Dentalium conradi</i> Dall	<i>Dentalium conradi</i> Dall	Genus, 57N–3S
17–13 Ma	<i>Dentalium conradi</i> Dall (striated form)	<i>Dentalium conradi</i> Dall	Genus, 57N–3S
8 Ma–H	<i>Dentalium neohexagonum</i> Sharp and Pilsbry	<i>Dentalium neohexagonum</i> Sharp and Pilsbry	37N–23N; 29N–23N Gulf of California; 7 to 256 m, and sandy mud
17–13 Ma	<i>Dentalium petricola</i> Dall (smooth form)	<i>Dentalium petricola</i> Dall	Genus, 57N–3S
27 Ma–H	<i>Dentalium</i> sp.	<i>Dentalium</i> sp.	Genus, 57N–3S
13? or 5–2.5 Ma	<i>Dichocoenia</i> cf. <i>D. stokesi</i> (Vaughan)	<i>Dichocoenia</i> cf. <i>stokesi</i> (Vaughan) (Cnidaria)	“Reef-corals,” living in Caribbean; common 15 m, rare 150 m
13? or 5–2.5 Ma	<i>Dichocoenia merriami</i> (Vaughan)	<i>Dichocoenia merriami</i> (Vaughan)	“Reef-corals,” living in Caribbean
13? or 5–2.5 Ma	<i>Dichocoenia merriami crasisepta</i> Vaughan	<i>Dichocoenia merriami crasisepta</i> Vaughan	“Reef-corals,” living in Caribbean
27–23 Ma	<i>Diodora</i> (<i>Diodora</i>) n.sp. Addicott	<i>Diodora</i> (<i>Diodora</i>) n.sp. Addicott	Genus, 60N–4S; intertidal to 180 m; rocky shore, open coast
27–23 Ma	<i>Diodora</i> (<i>Diodora</i>) n.sp. Addicott	<i>Diodora</i> ? n.sp. Addicott	Genus, 60N–4S
27–13 Ma	<i>Diodora</i> (<i>Diodora</i>) <i>rixfordi</i> (Hertlein)	<i>Fissurella rixfordi</i> Hertlein	Genus, 60N–4S
27–13 Ma	<i>Diodora</i> (<i>Diodora</i>) <i>rixfordi</i> (Hertlein) Addicott, 1970a, p. 40)	<i>Fissurella rixfordi</i> Hertlein	Genus, 60N–4S
17 Ma–H	<i>Diodora</i> aff. <i>D. fontainiana</i> (d’Orbigny)	<i>Diodora</i> aff. <i>D. aspera</i> (“Eschscholtz” Rathke)	5S
8? Ma–H	<i>Diodora</i> aff. <i>D. inaequalis</i> (Sowerby)	<i>Diodora</i> aff. <i>D. inaequalis</i> (Sowerby)	34N–4S
13? or 5 Ma–H	<i>Diodora alternata alternata</i> Say	<i>Diodora cayenensis</i> (Lamarck)	40N–15 N, Atlantic
8 Ma–H	<i>Diodora arnoldi</i> McLean	<i>Diadora arnoldi</i> McLean	42N–21N, in Gulf of California; sublittoral below 10 m
8 Ma–H	<i>Diodora arnoldi</i> McLean	<i>Diodora murina</i> (Arnold)	42N–21N, in Gulf of California
8 Ma–H	<i>Diodora arnoldi</i> McLean	<i>Diodora murina</i> (Carpenter in Arnold)	42N–21N, in Gulf of California
8 Ma–H	<i>Diodora arnoldi</i> McLean	<i>Fissuridea murina</i> Carpenter	42N–21N, in Gulf of California
17 Ma–H	<i>Diodora fontainiana</i> (d’Orbigny)	<i>Diadora aspera</i> (Eschscholtz)	5S
17 Ma–H	<i>Diodora fontainiana</i> (d’Orbigny)	<i>Diadora</i> cf. <i>D. aspera</i> (Eschscholtz in Rathke)	5S
8? Ma–H	<i>Diodora</i> n.sp.? aff. <i>D. inaequalis</i> (Sowerby)	<i>Diodora</i> n.sp.? aff. <i>D. inaequalis</i> (Sowerby)	34N–4S
N.D.	<i>Diodora</i> sp.	<i>Diadora</i> sp.	Genus, 60N–4S
8–5 Ma	<i>Diodora</i> sp. cf. <i>D. subelliptica</i> (Nomland)	<i>Diodora</i> sp. cf. <i>D. subelliptica</i> (Nomland)	Genus, 60N–4S
8–5 Ma	<i>Diodora subelliptica</i> (Nomland)	<i>Fissuridea subelliptica</i> Nomland	Genus, 60N–4S
27–13 Ma	<i>Diplodonta</i> (<i>Diplodonta</i>) <i>buwaldana</i> Anderson and Martin	<i>Taras buwaldanus</i> (Anderson and Martin)	Genus, 71N–4N; intertidal to 220 m (to 1360 m?)
27–13 Ma	<i>Diplodonta</i> (<i>Diplodonta</i>) <i>buwaldana</i> Anderson and Martin	<i>Diplodonta buwaldana</i> Anderson and Martin	Genus, 71N–4N; excluding <i>Diplodonta inconspicua</i>
27 Ma–H	<i>Diplodonta</i> (<i>Diplodonta</i>) <i>orbella</i> (Gould)	<i>Diplodonta</i> (<i>Diplodonta</i>) <i>orbella</i> Gould	36.6N–24.5N; under rocks in intertidal and sublittoral zones
27 Ma–H	<i>Diplodonta</i> (<i>Diplodonta</i>) <i>orbella</i> (Gould)	<i>Diplodonta orbella</i> (Gould)	37N–25N; intertidal to 46 m

5 Ma–H	<i>Diplodonta</i> cf. <i>D. subquadrata</i> (Carpenter)	<i>Diplodonta</i> cf. <i>D. subquadrata</i> Carpenter	26N–2N; on mudflats and to 137 m offshore
27–2.5 Ma	<i>Diplodonta harfordi</i> Anderson	<i>Diplodonta harfordi</i> Anderson	Genus, 71N–4S
27–2.5 Ma	<i>Diplodonta harfordi</i> Anderson	<i>Felaniella (Felaniella) harfordi</i> (Anderson)	Genus, 71N–4S
27–2.5 Ma	<i>Diplodonta harfordi</i> Anderson	<i>Taras harfordi</i> (Anderson)	Genus, 71N–4S
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Diplodonta (Felaniella) cornea</i> Reeve	34N–3.5S; intertidal to 75 m
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Diplodonta parilis</i> (Conrad)	34N–4S
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Diplodonta parilis</i> Conrad	34N–4S
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Diplodonta sericata</i> (Reeve)	34N–4S
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Felaniella (Felaniella) cornea</i> Reeve	34N–4S
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Felaniella (Zemysia) parilis</i> (Conrad)	34N–4S; not common north of 27N; intertidal to 75 m
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Felaniella (Zemysia) sericata</i> (Reeve)	34N–4S; sand and mud
23 Ma–H	<i>Diplodonta sericata</i> (Reeve)	<i>Taras parilis</i> (Conrad)	34N–4S
N.D.	<i>Diplodonta</i> sp.	<i>Taras</i> sp.	Genus, 71N–4S
N.D.	<i>Diplodonta</i> sp.	<i>Felaniella (Felaniella)</i> sp.	Genus, 71N–4S
N.D.	<i>Diplodonta</i> sp.	<i>Felaniella</i> sp.	Genus, 71N–4S
N.D.	<i>Diplodonta</i> sp.	<i>Diplodonta</i> sp.	Genus, 71N–4S
13? Ma–H	<i>Discinisca</i> aff. <i>D. lamellosa</i> (Broderip)	<i>Discinisca</i> aff. <i>D. lamellosa</i> Broderip (Brachiopoda)	34N–Chile; intertidal, attached to rocks in sandy mud
17? or 13 Ma–H	<i>Discinisca cumingi</i> (Broderip)	<i>Discinisca cumingi</i> Broderip	34N–Chile
17–13 Ma	<i>Discinisca loeli</i> Hertlein and Grant	<i>Discinisca loeli</i> Hertlein and Grant	Genus, 34N–Chile
N.D.	<i>Discinisca</i> sp.	<i>Discinisca</i> sp.	Genus, 34N–Chile
17? or 13 Ma–H	<i>Divalinga (Divalinga) ebrunea</i> (Reeve)	<i>Divalinga ebrunea</i> (Reeve)	25N–5S; intertidal to 55 m
17? or 13 Ma–H	<i>Divalinga (Divalinga) ebrunea</i> (Reeve)	<i>Divaricella eburnea</i> Reeve	25N–5S
N.D.	<i>Divalinga?</i> sp.	<i>Divalinga?</i> sp.	Genus, 26N–5S; intertidal to 55 m
5 Ma–H	<i>Donax (Paradonax) californicus</i> Conrad	<i>Donax californicus</i> Conrad	35.3N–3.5S; common in bays and intertidally in protected areas
5 Ma–H	<i>Donax gouldii</i> Dall	<i>Donax (Serrula) gouldii</i> Dall	37.1N–24.1N; beaches and hydroid colonies, intertidal to 5 m
N.D.	<i>Donax?</i> sp.	<i>Donax?</i> n.sp.	Genus, 37N–3S; intertidal to 27 m, in sand of exposed beaches
13–5 Ma	<i>Dosinia arnoldi</i> Clark	<i>Dosinia arnoldi</i> Clark	Genus, 28N–5S; on mudflats to 60 m
27–23 Ma	<i>Dosinia</i> cf. <i>montana</i> Conrad	<i>Dosinia</i> cf. <i>D. montana</i> Conrad	Genus, 28N–5S
27–23 Ma	<i>Dosinia conradi</i> Gabb	<i>Dosinia conradi</i> Gabb	Genus, 28N–5S
13? or 5 Ma–H	<i>Dosinia dunkeri</i> Philippi	<i>Dosinia dunkeri</i> Philippi	25N–3S; on mudflats and offshore to 55 m
8–5 Ma	<i>Dosinia jacalitosana</i> Arnold	<i>Dosinia jacalitosana</i> Arnold	Genus, 28N–5S
17–13 Ma	<i>Dosinia longidens</i> Grant and Gale	<i>Dosinia longidens</i> Grant and Gale	Genus, 28N–5S
27–13 Ma	<i>Dosinia margaritana projecta</i> Loel and Corey	<i>Dosinia margaritana projecta</i> Loel and Corey	Genus, 28N–5S
27–13 Ma	<i>Dosinia margaritana projecta</i> Loel and Corey	<i>Dosinia margaritana</i> var. <i>projecta</i> Loel and Corey	Genus, 28N–5S
27–13 Ma	<i>Dosinia margaritana projecta</i> Loel and Corey	<i>Dosinia (Dosinidia) margaritana</i> (Wiedey) <i>projecta</i> Loel and Corey	Genus, 28N–5S
27–13 Ma	<i>Dosinia margaritana</i> Wiedey	<i>Dosinia margaritana</i> Wiedey	Genus, 28N–5S
27–13 Ma	<i>Dosinia margaritana</i> Wiedey	<i>Dosinia (Dosinella) margaritana</i> Wiedey	Genus, 28N–5S
27–13 Ma	<i>Dosinia mathewsonii</i> Gabb	<i>Dosinia (Dosinidia) margaritana</i> Wiedey	Genus, 28N–5S
27–13 Ma	<i>Dosinia mathewsonii</i> Gabb	<i>Dosinia mathewsonii</i> Gabb	Genus, 28N–5S
27–13 Ma	<i>Dosinia mathewsonii</i> Gabb	<i>Dosinia (Dosinidia) mathewsoni</i> (Gabb)	Genus, 28N–5S
27–13 Ma	<i>Dosinia merriami</i> Clark	<i>Dosinia (Dosinella) merriami</i> Clark	Genus, 28N–5S
27–13 Ma	<i>Dosinia merriami</i> Clark	<i>Dosinia (Dosinella) merriami occidentalis</i> Clark	Genus, 28N–5S
27–13 Ma	<i>Dosinia merriami</i> Clark	<i>Dosinia merriami</i> Clark	Genus, 28N–5S
27–13 Ma	<i>Dosinia merriami</i> Clark	<i>Dosinia merriami occidentalis</i> Clark	Genus, 28N–5S
27–13 Ma	<i>Dosinia merriami</i> Clark	<i>Dosinia merriami</i> var. <i>occidentalis</i> Clark	Genus, 28N–5S
27 Ma–H	<i>Dosinia ponderosa</i> (Schumacher)	<i>Dosinia ponderosa</i> Gray	28N–5S; offshore to 60 m
27 Ma–H	<i>Dosinia ponderosa</i> (Schumacher, 1817) (not J.E. Gray, 1838)	<i>Dosinia ponderosa</i> Gray	28N–5S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
5–2.5 Ma	<i>Dosinia ponderosa diegoana</i> Hertlein	<i>Dosinia ponderosa diegoana</i> Hertlein	Species, 28N–5S
13–8 Ma	<i>Dosinia ponderosa longidens</i> Grant and Gale	<i>Dosinia ponderosa</i> (Gray) var. <i>longidens</i> Grant and Gale	Species, 28N–5S
27–23 Ma	<i>Dosinia santana</i> Loel and Corey	<i>Dosinia santana</i> Loel and Corey	Genus, 28N–5S
17–13 Ma	<i>Dosinia sobrantensis</i> Lutz	<i>Dosinia sobrantensis</i> Lutz	Genus, 28N–5S
N.D.	<i>Dosinia</i> sp.	<i>Dosinia</i> sp.	Genus, 28N–5S, Pacific; 40N–15N, Atlantic. Mudflats to 60 m
23–13 Ma	<i>Dosinia whitneyi</i> (Gabb)	<i>Dosinia</i> (<i>Dosinidia</i>) <i>whitneyi</i> (Gabb)	Genus, 28N–5S
23–13 Ma	<i>Dosinia whitneyi</i> (Gabb)	<i>Dosinia</i> (<i>Dosinia</i>) <i>whitneyi</i> (Gabb)	Genus, 28N–5S
8–2.5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	“ <i>Pleurotoma</i> ” cf. “ <i>P.</i> ” <i>coalingensis</i> Arnold	Subgenus, 66N–3S; 20 to 165 m
8–2.5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	<i>Clathrodrillia coalingensis</i> (Arnold)	Subgenus, 66N–3S
8–2.5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	<i>Clavus</i> (<i>Clathrodrillia</i>) <i>elsmerensis</i> (English)	Subgenus, 66N–3S
8–2.5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	<i>Clavus coalingensis</i> (Arnold)	Subgenus, 66N–3S
8–2.5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	<i>Neptunea coalingensis</i> Arnold	Subgenus, 66N–3S
13? or 8–5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>elsmerensis</i> (English)	<i>Pleurotoma coalingensis</i> Arnold	Subgenus, 66N–3S
N.D.	<i>Drillia</i> (<i>Clathrodrillia</i>) sp.	<i>Pleurotoma</i> sp.	Subgenus, 66N–3S
8–5 Ma	<i>Drillia</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	<i>Clavus</i> (<i>Clathrodrillia</i>) <i>coalingensis</i> (Arnold)	Subgenus, 66N–3S
17–13 Ma	<i>Drillia columbiana</i> Anderson and Martin	<i>Drillia columbiana</i> Anderson and Martin	Questionable taxonomic assignment
13–8 Ma	<i>Echinarachinus gabbi</i> (Rémond) <i>kleinPELLI</i> Grant and Gale (Echinodermata)	<i>Echinarachinus gabbi</i> (Rémond) var. <i>tenuis</i> Kew (Echinodermata)	Genus, 56N–48N, and Japan
13–8 Ma	<i>Echinarachinus gabbi</i> (Rémond) <i>kleinPELLI</i> Grant and Gale	<i>Scutella gabbi</i> var. <i>tenuis</i> Kew	Genus, 56N–48N, and Japan
13–8 Ma	<i>Echinarachnius gabbi</i> (Rémond)	<i>Scutella</i> (<i>Clypeaster</i>) <i>gabbi</i> Rémond	Genus, 56N–48N, and Japan
13–8 Ma	<i>Echinarachnius gabbi</i> (Rémond)	<i>Scutella gabbi</i> Rémond	Genus, 56N–48N, and Japan
13–8 Ma	<i>Echinarachnius gabbi</i> (Rémond)	<i>Echinarachnius gabbi</i> (Rémond)	Genus, 56N–48N, and Japan
5 Ma–H	<i>Echinometra</i> sp.	<i>Echinometra</i> sp.	27N–0, through Gulf of California
8 Ma–H	<i>Elaeocyma empyrosia</i> (Dall)	<i>Elaeocyma empyrosia</i> (Dall)	34N–33N
5–2.5 Ma	<i>Elaeocyma hemphilli</i> (Stearns)	<i>Elaeocyma hemphilli</i> (Stearns)	Genus, 34N–23N; intertidal to 92 m
5–2.5 Ma	<i>Encope sverdrupi</i> Durham (Echinodermata)	<i>Encope</i> sp. aff. <i>tenuis</i> Kew (Echinodermata)	Genus, 25N–5S, through Gulf of California
13? or 5–2.5 Ma	<i>Encope tenuis</i> Kew	<i>Encope tenuis</i> Kew	Genus, 25N–5S, Gulf of California
17–13 Ma	<i>Ennucula birchi</i> (Keen)	<i>Nucula</i> (<i>Leionucula</i>) <i>birchi</i> Keen	Genus, 71N–Chile; 10 to 900 m
17–13 Ma	<i>Ennucula birchi</i> (Keen)	<i>Nucula</i> (<i>Ennucula</i>) <i>birchi</i> Keen	Genus, 71N–Chile
23–17 Ma	<i>Ennucula nukulana</i> (Dall)	<i>Nucula</i> (<i>Ennucula</i> ?) <i>nukulana</i> (Dall)	Genus, 71N–Chile
23–17 Ma	<i>Ennucula nukulana</i> (Dall)	<i>Nuculana nukulana</i> (Dall)	Genus, 71N–Chile
5 Ma–H	<i>Ennucula tenuis</i> (Montagu)	<i>Nucula</i> (<i>Leionucula</i>) <i>balboana</i> Hertlein	71N–32.7N; 10 to 900 m
5 Ma–H	<i>Ennucula tenuis</i> (Montagu)	<i>Nucula</i> (<i>Ennucula</i>) <i>balboana</i> Hertlein	71N–33N
5 Ma–H	<i>Ensis myrae</i> Berry	<i>Ensis myrae</i> Berry	36.6N–27.2N; genus, intertidal to 46 m; species, 5 to 25 m
N.D.	<i>Ensis</i> sp.	<i>Ensis</i> sp.	Genus, 37N–3S
27? or 13 Ma–H	<i>Epilucina</i> cf. <i>E. californica</i> (Conrad)	<i>Phacoides</i> (<i>Callucina</i>) cf. <i>californicus</i> Conrad	41.8N–25N; living in gravel in rocky areas, low tide sublittoral to 80 m
27? or 13 Ma–H	<i>Epilucina californica</i> (Conrad)	<i>Lucina</i> (<i>Epilucina</i>) <i>californica</i> Conrad	42N–25N
27? or 13 Ma–H	<i>Epilucina californica</i> (Conrad)	<i>Lucina californica</i> Conrad	42N–25N
27? or 13 Ma–H	<i>Epilucina californica</i> (Conrad)	<i>Lucina</i> (<i>Myrtea</i>) <i>californica</i> Conrad	42N–25N
27? or 13 Ma–H	<i>Epilucina californica</i> (Conrad)	<i>Codakia</i> (<i>Codakia</i>) <i>californica</i> (Conrad)	41.8N–25N; living in gravel in rocky areas, low tide sublittoral to 80 m
8–2.5 Ma	<i>Epitonium</i> (<i>Boreoscala</i>) <i>hemphilli</i> (Dall)	<i>Epitonium hemphilli</i> (Dall)	Subgenus, circumboreal
27–23 Ma	<i>Epitonium</i> (<i>Cirsotrema</i>) <i>clallamense</i> Durham	<i>Epitonium</i> (<i>Cirsotrema</i>) <i>clallamense</i> Durham	Subgenus, 28N–0 in Gulf of California

23–13 Ma	<i>Epitonium (Cirsotrema) posoense</i> Anderson and Martin	<i>Epitonium (Cirsotrema) posoense</i> Anderson and Martin	Subgenus, 28N–0 in Gulf of California
23–13 Ma	<i>Epitonium (Cirsotrema) posoense</i> Anderson and Martin	<i>Epitonium posoensis</i> Anderson and Martin	Subgenus, 28N–0, in Gulf of California
N.D.	<i>Epitonium (Cirsotrema?)</i> sp.	<i>Epitonium (Cirsotrema?)</i> sp.	Subgenus, 28N–0, in Gulf of California
17–13 Ma	<i>Epitonium (Gyroscala) barkerianum</i> Addicott	<i>Epitonium (Gyroscala) barkerianum</i> Addicott	Genus, 72N–3S; intertidal to 365 m
8–5 Ma	<i>Epitonium (Nitidiscala)</i> cf. <i>E. (N.) eelense</i> Durham	<i>Epitonium</i> cf. <i>E. eelense</i> Durham	Subgenus, 55N–23N
8–5 Ma	<i>Epitonium (Nitidiscala)</i> cf. <i>E. (N.) eelense</i> Durham	<i>Epitonium (Nitidiscala)</i> cf. <i>E. eelense</i> Durham	Subgenus, 55N–23N
5 Ma–H	<i>Epitonium (Nitidiscala) indianorum</i> (Carpenter)	<i>Epitonium indianorum</i> Carpenter	55N–24N
5 Ma–H	<i>Epitonium (Nitidiscala) indianorum</i> (Carpenter)	<i>Epitonium (Nitidiscala) indianorum</i> (Carpenter)	55N–24N
5 Ma–H	<i>Epitonium (Nitidiscala) tinctum</i> (Carpenter)	<i>Epitonium fallaciosum</i> Dall?	49N–23N; near base of anemones, exposed at low tide
5 Ma–H	<i>Epitonium (Nitidiscala) tinctum</i> (Carpenter)	<i>Epitonium tinctum</i> (Carpenter)	49N–23N
5 Ma–H	<i>Epitonium (Nitidiscala) tinctum</i> (Carpenter)	<i>Epitonium (Nitidiscala) tinctum</i> (Carpenter)	49N–23N
17–13 Ma	<i>Epitonium (Nitidiscala) tedfordi</i> Addicott	<i>Epitonium (Nitidiscala) tedfordi</i> Addicott	Subgenus, 55N–23N
17–13 Ma	<i>Epitonium (Nitidiscala) tedfordi</i> Addicott	<i>Epitonium</i> cf. <i>E. indianorum</i> (Carpenter)	Subgenus, 55N–23N, if <i>E. indianorum</i> , 55N–24N
8–5 Ma	<i>Epitonium cedroensis</i> Jordan and Hertlein	<i>Epitonium cedroensis</i> Jordan and Hertlein	Genus, 72N–3S
8–5 Ma	<i>Epitonium contrerasi</i> Jordan and Hertlein	<i>Epitonium contrerasi</i> Jordan and Hertlein	Genus, 72N–3S
23–5 Ma	<i>Epitonium dallasi</i> Jordan and Hertlein	<i>Epitonium dallasi</i> Jordan and Hertlein	Genus, 72N–3S, Pacific; 41N–15N, Atlantic
13? or 5–2.5 Ma	<i>Epitonium efferum</i> Bramkamp	<i>Epitonium efferum</i> Bramkamp in Durham	Genus, 72N–3S
N.D.	<i>Epitonium</i> sp.	<i>Epitonium</i> sp.	Genus, 72N–3S
5 Ma–H	<i>Erato (Hespereato)</i> cf. <i>E. (H.) scabriuscula</i> Gray	<i>Erato</i> cf. <i>E. scabriuscula</i> Gray	Gulf of California south of equator
N.D.	<i>Eucidaris</i> sp. or <i>Hesperocidaris</i> sp. (Echinodermata)	<i>Cidaris</i> sp. (Echinodermata).	<i>Eucidaris</i> , Gulf of California–3S
23 Ma–H	<i>Eucidaris thouarsii</i> (Valenciennes)	<i>Cidaris thouarsii?</i> valenciennes (Kew)	Gulf of California–0
23 Ma–H	<i>Eucidaris thouarsii</i> (Valenciennes)?	<i>Cidaris thouarsii</i> (?) Valenciennes (Kew)?	Gulf of California–0
13 Ma–H	<i>Eucrassatella (Hybolophus) digueti</i> (Lamy)	<i>Eucrassatella digueti</i> Lamy	30N–3N; rare intertidal, 13 to 64 m
13–5 Ma	<i>Eucrassatella (Hybolophus) subgibbosa</i> (Hanna)	<i>Eucrassatella (Hybolophus) subgibbosa</i> (Hanna)	Subgenus, 33N–5S
13–5 Ma	<i>Eucrassatella (Hybolophus) subgibbosa</i> (Hanna)	<i>Crassatellites subgibbosus</i> Hanna	Subgenus, 33N–5S
8 Ma–H	<i>Eucrassatella</i> aff. <i>E. fluctuata</i> (Carpenter) (<i>Crassatella</i> fide McLean, 1978)	<i>Crassatellites granti</i> (Wiedey)	34.1N–32.9N; on rocky sublittoral substrate or 10 to 320 m
27–23-rare 13 Ma	<i>Eucrassatella granti</i> (Wiedey)	<i>Crassatella granti</i> (Wiedey)	Genus, 34N–5S; intertidal to 64 m
27–23-rare 13 Ma	<i>Eucrassatella granti</i> (Wiedey)	<i>Eucrassatella</i> aff. <i>E. fluctuata</i> (Carpenter)	Genus, 34N–5S; on rocky sublittoral substrate or 10 to 320 m
27–23-rare 13 Ma	<i>Eucrassatella granti</i> (Wiedey)	<i>Eucrassatella granti</i> (Wiedey)	Genus, 34N–5S
27–23-rare 13 Ma	<i>Eucrassatella granti</i> (Wiedey)	<i>Eucrassatella</i> n.sp. Powell	Genus, 34N–5S
N.D.	<i>Eucrassatella</i> n.sp. Powell	<i>Spisula granti</i> (Wiedey)	Genus, 34N–5S
N.D.	<i>Eucrassatella</i> sp.	<i>Crassatella</i> sp.	Genus, 34N–5S
N.D.	<i>Eucrassatella</i> sp.	<i>Crassatellites</i> sp.	Genus, 34N–5S
N.D.	<i>Eucrassatella</i> sp.	<i>Crassatellites</i> n.sp.	Genus, 34N–5S
N.D.	<i>Eucrassatella</i> sp.	<i>Eucrassatella</i> n.sp. ?	Genus, 34N–5S
23–13 Ma	<i>Eulima gabbiana</i> (Anderson and Martin)	<i>Eulima gabbiana</i> (Anderson and Martin)	Genus, 23N–5N, through Gulf of California; 5 to 110 m
23–13 Ma	<i>Eulima gabbiana</i> (Anderson and Martin)	<i>Melanella (Melanella) gabbiana</i> (Anderson and Martin)	Genus, 23N–5N, through Gulf of California
23–13 Ma	<i>Eulima gabbiana</i> (Anderson and Martin)	<i>Pyramidella (Eulimella) gabbiana</i> (Anderson and Martin)	Genus, 23N–5N, through Gulf of California
5–2.5 Ma	<i>Eulima raymondi</i> (Rivers)	<i>Strombiformis riversi</i> Bartsch	Genus, 23N–5N, through Gulf of California
8–5 Ma	<i>Eupleura perangulata</i> (Nomland)	<i>Murex perangulatus</i> Nomland	Genus, 33N–8N, throughout Gulf of California; 27 m
5 Ma–H	<i>Euplura muriciformis</i> (Broderip)	<i>Trophon muriciformis</i> Dall	28N–3S, through Gulf of California; intertidal and offshore, on “reefs”
13–2.5 Ma	<i>Eusmilia carrizensis</i> Vaughan	<i>Eusmilia solida</i> (Nomland) (Cnidaria)	“Reef-corals,” genus living in Caribbean

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13–2.5 Ma	<i>Euvola keepi</i> (Arnold) 13–2.5 Ma	<i>Euvola keepi</i> (Arnold)	Genus, 38N–22.9N; intertidal to 155 m
13–2.5 Ma	<i>Euvola keepi</i> (Arnold) 13–2.5 Ma	<i>Pecten (Pecten) keepi</i> Arnold	Genus, 38N–23N
13–2.5 Ma	<i>Euvola keepi</i> (Arnold) 13–2.5 Ma	<i>Pecten keepi</i> Arnold	Genus, 38N–23N
5–2.5 Ma	<i>Euvola refugioensis</i> (Hertlein) 5–2.5 Ma	<i>Pecten (Pecten) refugioensis</i> Hertlein	Genus, 38N–23N
5 Ma–H	<i>Exilioidea rectirostris</i> (Carpenter)	<i>Exilioidea rectirostris</i> (Carpenter)	56N–30N; genus, 55 to 825 m
5 Ma–H	<i>Exilioidea rectirostris</i> (Carpenter)	<i>Chrysodomus liratus</i> Martyn var. <i>rectirostris</i> Carpenter	56N–30N
13 Ma–H	<i>Fasciolaria (Pleuroploca) princeps</i> Sowerby	<i>Fasciolaria princeps</i> Sowerby	Gulf of California–5S; “offshore”
27–13 Ma	<i>Ficus (Ficus) cf. F. (F.) modesta?</i> (Conrad)	<i>Ficus (Ficus) cf. modestus</i> (Conrad)	Genus, 25N–5S, through Gulf of California; intertidal and “offshore”
17–13 Ma	<i>Ficus (Ficus) cf. F. (F.) pyriformis</i> Gabb	<i>Ficus cf. F. modesta</i> (Conrad)	Genus, 25N–5S, through Gulf of California
27–13 Ma	<i>Ficus (Ficus) modesta</i> (Conrad)	<i>Ficus modesta</i> (Conrad)	Genus, 25N–5S, through Gulf of California
17–13 Ma	<i>Ficus (Ficus) pyriformis</i> Gabb	<i>Ficus pyriformis</i> Gabb	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Ficus) sp.</i>	<i>Ficus (Ficus) sp.</i>	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Agasoma kernianum</i> Cooper	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Agasoma stanfordensis</i> Arnold	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus (Trophosycon) kerniana</i> Cooper	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus (Trophosycon) n.sp. A</i> (large)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus (Trophosycon) ocoyanus</i> (Conrad)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus kerniana</i> (Cooper)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus kernianum</i> Cooper	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus kernianus</i> (Cooper)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus nodiferus</i> Gabb	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus ocoyana</i> (Conrad)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus rodeoensis</i> English	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Ficus stanfordensis</i> Arnold	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Fusinus stanfordensis</i> (Arnold)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Trophosycon cf. T. ocoyanum</i> (Conrad)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Trophosycon clallamensis</i> (Weaver) <i>nodibulbosa</i> (Grant and Gale)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Trophosycon kernianum</i> (Cooper)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Trophosycon nodifera</i> (Gabb)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Trophosycon nodiferum</i> (Gabb)	Genus, 25N–5S, through Gulf of California
27–8 Ma	<i>Ficus (Trophosycon) kerniana</i> (Cooper)	<i>Trophosycon ocoyana</i> (Conrad) <i>ruginodosa</i> (Grant and Gale)	Genus, 25N–5S, through Gulf of California
13–8 Ma	<i>Ficus (Trophosycon) rodeoensis</i> (English)	<i>Trophosycon oregonense</i> (Conrad)	Genus, 25N–5S, through Gulf of California
N.D.	<i>Ficus (Trophosycon) sp.</i>	<i>Trophosycon stanfordense</i> (Arnold)	Genus, 25N–5S, through Gulf of California
N.D.	<i>Ficus (Trophosycon) sp.</i>	<i>Trophosycon sp.</i>	Genus, 25N–5S, through Gulf of California
N.D.	<i>Ficus (Trophosycon) sp.</i> ; or, <i>Bruclarkia</i> sp.	<i>Agasoma sp.</i>	Ficus, 25N–5S, through Gulf of California; or, genus not living
N.D.	<i>Ficus sp.</i>	<i>Ficus sp.</i>	Questionable taxonomic assignment
13 Ma–H	<i>Ficus ventricosa</i> (Sowerby)	<i>Ficus decussata</i> Wood	25N–5S, through Gulf of California
13 Ma–H	<i>Ficus ventricosa</i> (Sowerby)	<i>Ficus ventricosa</i> (Sowerby)	25N–5S, through Gulf of California; beach and “offshore”
N.D.	<i>Fissurella sp.</i>	<i>Fissurella sp.</i>	Genus, 33N–3S; intertidal to 37 m
5 Ma–H	<i>Fissurellidea bimaculata</i> (Dall)	<i>Fissurellidea bimaculata</i> (Dall)	55N–24N
13–2.5 Ma	<i>Flabellipecten carrizoensis</i> (Arnold) 13–2.5 Ma	<i>Pecten (Pecten) carrizoensis</i> Kew	Genus, 38N–4S; 13 to 155 m
13–2.5 Ma	<i>Flabellipecten carrizoensis</i> (Arnold) 13–2.5 Ma	<i>Pecten carrizoensis</i> Arnold	Genus, 38N–4S
N.D.	<i>Flabellipecten n.sp.</i> Powell	<i>Flabellipecten n.sp.</i> Powell	Genus, 38N–4S
8–1 Ma	<i>Flabellipecten stearnsii</i> (Dall) 8–1 Ma	<i>Pecten (Flabellipecten) stearnsii</i> Dall	Genus, 38N–4S
8–1 Ma	<i>Flabellipecten stearnsii</i> (Dall) 8–1 Ma	<i>Pecten (Pecten) stearnsii</i> Dall	Genus, 38N–4S

8–1 Ma	<i>Flabellipecten stearnsii</i> (Dall)	8–1 Ma	<i>Pecten (Janaria) stearnsii</i> Dall	Genus, 38N–4S
8–1 Ma	<i>Flabellipecten stearnsii</i> (Dall)	8–1 Ma	<i>Pecten stearnsii</i> Dall	Genus, 38N–4S
27–23 Ma	<i>Flabellipecten? hawleyi</i> (Hertlein)	27–23 Ma	<i>Pecten (Pecten) hawleyi</i> Hertlein	Genus, 38N–4S
5–2.5 Ma	<i>Flabellipecten? merriami</i> (Arnold)	5–2.5 Ma	<i>Pecten (? Patinopecten) merriami</i> Arnold	Genus, 38N–4S
8–5 Ma	<i>Fluminicola kettlemanensis</i> Pilsbry?		<i>Fluminicola kettlemanensis</i> Pilsbry?	Freshwater
13–8 Ma	<i>Forreria avita</i> (Nomland)		<i>Trophon ponderosum</i> Gabb	Genus, 34N–28N
8 Ma–H	<i>Forreria belcheri</i> (Hinds)		<i>Forreria belcheri</i> (Hinds)	34N–28N; intertidal to 135 m; sandy bottoms in shallow water
8 Ma–H	<i>Forreria belcheri</i> (Hinds)		<i>Forreria belcheri</i> (Hinds)?	34N–28N
8 Ma–H	<i>Forreria belcheri</i> (Hinds)		<i>Trophon belcheri</i> Hinds	34N–28N
8 Ma–H	<i>Forreria belcheri</i> (Hinds)		<i>Trophon</i> sp. cf. <i>Forreria belcheri</i> (Hinds) of Durham and Addicott (1965;	34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Forreria cancellaroides</i> Arnold	Genus, 34N–28N; intertidal to 135 m
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Forreria gabbiana</i> (Anderson)	Genus, 34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Forreria gabbianum</i> (Anderson)	Genus, 34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Forreria gabbianum</i> (Anderson) <i>cancellarioides</i> (Arnold)	Genus, 34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Forreria gabbianum cancellarioides</i> (Arnold)	Genus, 34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Trophon (Forreria) gabbianum</i> Anderson	Genus, 34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Trophon (Forreria) gabbianum cancellaroides</i> Arnold	Genus, 34N–28N
23–13 or 8? Ma	<i>Forreria cancellaroides</i> (Arnold)		<i>Trophon (Forreria) gabbianum</i> F.M. Anderson	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Forreria carisaensis</i> (Anderson and Martin)	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Forreria carisaensis</i> (Anderson)	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Forreria lawsoni</i> (Clark)	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Trophon (Forreria) carisaensis</i> (Anderson)	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Trophon carisaensis</i> Anderson	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Trophon dickersoni</i> Clark	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Trophon dickersoni</i> Clark <i>nomlandi</i> Adegoke	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis</i> (Anderson)		<i>Trophon lawsoni</i> Clark	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis mirandaensis</i> (Grant and Eaton)		<i>Trophon carisaensis mirandaensis</i> Grant and Eaton	Genus, 34N–28N
13–8, rare to 5 Ma	<i>Forreria carisaensis mirandaensis</i> (Grant and Eaton)		<i>Forreria carisaensis</i> (Anderson) <i>mirandaensis</i> (Grant and Eaton)	Genus, 34N–28N
8–5 Ma	<i>Forreria coalingensis</i> (Arnold)		<i>Forreria coalingensis</i> (Arnold)	Genus, 34N–28N
13–8 Ma	<i>Forreria cuyamanus</i> (Grant and Eaton)		<i>Trophon clarki cuyamanus</i> Grant and Eaton	Genus, 34N–28N
27–23 Ma	<i>Forreria emersoni</i> Addicott		<i>Forreria emersoni</i> Addicott	Genus, 34N–28N
8–5 or 2.5? Ma	<i>Forreria magister</i> (Nomland)		<i>Forreria magister</i> (Nomland)	Genus, 34N–28N
8–5 or 2.5? Ma	<i>Forreria magister</i> (Nomland)		<i>Trophon magister</i> Nomland	Genus, 34N–28N
8–2.5 Ma	<i>Forreria magister munda</i> Stewart		<i>Forreria magister munda</i> Stewart	Genus, 34N–28N
13–8 Ma	<i>Forreria perelegans</i> (Nomland)		<i>Trophon (Forreria) perelegans</i> Nomland	Genus, 34N–28N
13–8 Ma	<i>Forreria perelegans</i> (Nomland)		<i>Trophon perelegans</i> Nomland	Genus, 34N–28N
N.D.	<i>Forreria</i> sp.		<i>Forreria</i> sp.	Genus, 34N–28N
13–8 Ma	<i>Forreria wilkesana</i> (Anderson)		<i>Forreria wilkesana</i> (Anderson)	Genus, 34N–28N
8–2.5 Ma	<i>Forreria wrighti</i> Jordan and Hertlein		<i>Forreria wrighti</i> Jordan and Hertlein	Genus, 34N–28N
N.D.	<i>Frieleia</i> , <i>Hispanirhynchia</i> , or <i>Neorhynchia</i>		<i>Hemithiris</i> sp. (sic: <i>Hemithyris</i>) (Brachiopoda)	Questionable taxonomic assignment
8 Ma–H	<i>Fusinus arnoldi</i> (Cossmann)		<i>Barbarofusus arnoldi</i> (Cossmann)?	34N–33N
8 Ma–H	<i>Fusinus barbarensis</i> (Trask)		<i>Barbarofusus barbarensis</i> (Trask)	44N–33N
8 Ma–H	<i>Fusinus barbarensis</i> (Trask)		<i>Fusinus barbarensis</i> (Trask)	44N–33N
8 Ma–H	<i>Fusinus barbarensis</i> (Trask)		<i>Fusinus (Barbarofusus)? barbarensis</i> Trask	46N–33N
8–5 Ma	<i>Fusinus coalingensis</i> (Nomland)		<i>Chrysodomus coalingensis</i> Nomland	Genus, 50N–3S; intertidal to 185 m
13–8 Ma	<i>Fusinus fabulator</i> Nomland		<i>Fusinus fabulator</i> Nomland	Genus, 50N–3S
N.D.	<i>Fusinus</i> sp.		<i>Fusus</i> sp.	Genus, 50N–3S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
N.D.	<i>Fusinus</i> sp.	<i>Fusinus</i> n.sp.	Genus, 50N–3S
5–2.5 Ma	<i>Fusitriton arnoldi</i> (Martin)	<i>Argobuccinum</i> (<i>Fusitriton</i>) <i>arnoldi</i> Martin	Genus, 59N–33N; intertidal to 137 m
5–2.5 Ma	<i>Fusitriton corbiculata</i> (Dall)	<i>Argobuccinum</i> (<i>Fusitriton</i>) <i>coosense</i> Dall	Genus, 59N–33N
8 Ma–H	<i>Fusitriton oregonense</i> (Redfield)	<i>Argobuccinum</i> (<i>Fusitriton</i>) cf. <i>A. (F.) oregonense</i> (Redfield)	59N–33N
8 Ma–H	<i>Fusitriton oregonense</i> (Redfield)	<i>Argobuccinum arnoldi</i> Martin	59N–33N
8 Ma–H	<i>Fusitriton oregonense</i> (Redfield)	<i>Argobuccinum oregonensis</i> Redfield	59N–33N
8 Ma–H	<i>Fusitriton oregonense</i> (Redfield)	<i>Argobuccinum scotiaensis</i> Martin	59N–33N
8 Ma–H	<i>Fusitriton oregonense</i> (Redfield)	<i>Chrysodomus scotiaensis</i> Martin	59N–33N
8 Ma–H	<i>Fusitriton oregonense</i> (Redfield)	<i>Fusitriton oregonensis</i> (Redfield)	59N–33N
8–5 Ma	<i>Fusitriton oregonense angelense</i> (Arnold)	<i>Priene oregonensis</i> var. <i>angelense</i> Arnold	Species, 59N–33N
8–5 Ma	<i>Fusitriton oregonense angelense</i> (Arnold)	<i>Priene oregonensis</i> Redfield <i>angelensis</i> Arnold	Species, 59N–33N
N.D.	<i>Fusitriton</i> sp.	<i>Fusitriton</i> sp.	Genus, 59N–33N
N.D.	<i>Fusitriton</i> sp.	<i>Priene</i> n.sp.	Genus, 59N–33N
8 Ma–H	<i>Gari</i> (<i>Gobraeus</i>) <i>californica</i> (Conrad)	<i>Gari californica</i> (Conrad)	60.8N–24.6N; sand, gravel, rocky areas, sandflats of bays, to 280 m
27 Ma–H	<i>Gari</i> (<i>Gobraeus</i>) <i>fucata</i> (Hinds)	<i>Gari edentula</i> (Gabb)	34N–25N; 5 to 137m, sand or mud
27 Ma–H	<i>Gari</i> (<i>Gobraeus</i>) <i>fucata</i> (Hinds)	<i>Gari edentula</i> (Gabb)?	34N–253N
27 Ma–H	<i>Gari</i> (<i>Gobraeus</i>) <i>fucata</i> (Hinds)	<i>Gari fucata</i> (Hinds)	34N–25N
27 Ma–H	<i>Gari</i> (<i>Gobraeus</i>) <i>fucata</i> (Hinds)	<i>Gobraeus edentulus</i> Gabb	34N–25N
27 Ma–H	<i>Gari</i> (<i>Gobraeus</i>) <i>fucata</i> (Hinds)	<i>Psammobia edentula</i> Gabb	34N–25N
N.D.	<i>Gari</i> sp.	<i>Psammobia</i> sp.	Genus, 61N–2S; intertidal to 280 m
N.D.	<i>Gari</i> sp.	<i>Gari</i> sp.	Genus, 61N–2S
17–13 Ma	<i>Gibbula</i> (<i>Tumulus</i> ?) <i>baileyi</i> Addicott	<i>Gibbula</i> (<i>Tumulus</i> ?) <i>baileyi</i> Addicott	Genus, 37N–33N; subgenus, European waters; intertidal
5 Ma–H	<i>Glans carpenteri</i> (Lamy)	<i>Glans subquadrata</i> (Carpenter)	53.9N–27.7N; intertidal to 100 m
N.D.	<i>Globivenus</i> sp.	<i>Antigona</i> sp.	Genus, 37N–3N
N.D.	<i>Globivenus</i> sp.?	<i>Cytherea</i> (<i>Cytherea</i>) n.sp.	Genus, 37N–3N
N.D.	<i>Globivenus</i> sp.?	<i>Ventricolaria</i> sp.?	Genus, 37N–3N
13? or 8 Ma–H	<i>Globidrillia</i> cf. <i>G. hemphilli</i> (Stearns)	<i>Clavus</i> cf. <i>C. (Cymatosyrinx) hemphilli</i> (Stearns)	34N–23N; genus, 10 to 45 m
27–23 Ma	<i>Globivenus carrizoensis</i> (Loel and Corey)	<i>Antigona carrizoensis</i> Loel and Corey	Genus, 37N–3N; 10 to 73 m
27–23 Ma	<i>Globivenus carrizoensis</i> (Loel and Corey)	<i>Ventricolaria carrizoensis</i> (Loel and Corey)	Genus, 37N–3N; 10 to 73 m
5 Ma–H	<i>Globivenus fordii</i> (Yates)	<i>Ventricolaria fordii</i> (Yates)	37N–27N
27–23 Ma	<i>Globivenus vaquerosensis</i> (Loel and Corey)	<i>Antigona vaquerosensis</i> Loel and Corey	Genus, 37N–3N
27–23 Ma	<i>Globivenus vaquerosensis</i> (Loel and Corey)	<i>Ventricolaria vaquerosensis</i> (Loel and Corey)	Genus, 37N–3N
13–8 Ma	<i>Globivenus welchensis</i> (Hall)	<i>Ventricolaria welchensis</i> Hall	Genus, 37N–3N
13–8 Ma	<i>Globivenus willisi</i> (Trask)	<i>Antigona willisi</i> Trask	Genus, 37N–3N
13–8 Ma	<i>Globivenus willisi</i> (Trask)	<i>Ventricolaria willisi</i> (Trask)	Genus, 37N–3N
13–8 Ma	<i>Globivenus willisi</i> (Trask)	<i>Antigona willisi</i> P. D. Trask	Genus, 37N–3N
5 Ma–H	<i>Glottidia albida</i> (Hinds) (Brachiopoda)	<i>Glottidia albida</i> Hinds (Brachiopoda)	37N–18N
N.D.	<i>Glottidia</i> sp.	<i>Lingula</i> sp.	Genus, 37N–18N
13? or 5 Ma–H	<i>Glycymeris</i> (<i>Axinactis</i>) <i>delessertii</i> (Reeve)	<i>Glycymeris</i> (<i>Axinactis</i>) <i>delessertii</i> (Reeve)	23N–2N
13 Ma–H	<i>Glycymeris</i> (<i>Axinola</i>) aff. <i>G. (A.) septentrionalis</i> Middendorff	<i>Glycymeris</i> aff. <i>G. subobsoleta</i> (Carpenter)	60N–25N
13 Ma–H	<i>Glycymeris</i> (<i>Axinola</i>) aff. <i>G. (A.) septentrionalis</i> Middendorff	<i>Glycymeris</i> (<i>Axinola</i>) aff. <i>G. (A.) subobsoleta</i> (Carpenter)	60N–25N; intertidal to 400 m
17–2.5 Ma	<i>Glycymeris</i> (<i>Axinola</i>) <i>grewingki</i> Dall	<i>Glycymeris</i> (<i>Axinola</i>) <i>grewingki</i> Dall	Subgenus, 60N–23N
17–2.5 Ma	<i>Glycymeris</i> (<i>Axinola</i>) <i>grewingki</i> Dall	<i>Glycymeris</i> cf. <i>G. grewingki</i> Dall	Subgenus, 60N–23N
17–2.5 Ma	<i>Glycymeris</i> (<i>Axinola</i>) <i>grewingki</i> Dall	<i>Glycymeris coalingensis</i> (Arnold)	Subgenus, 60N–23N
17–2.5 Ma	<i>Glycymeris</i> (<i>Axinola</i>) <i>grewingki</i> Dall	<i>Glycymeris grewingki</i> Dall	Subgenus, 60N–23N

8 Ma–H	<i>Glycymeris (Axinola) profunda</i> Dall	<i>Glycymeris (Axinola) profunda</i> Dall	34N–33N; 46 to 365 m
8 Ma–H	<i>Glycymeris (Axinola) profunda</i> Dall	<i>Glycymeris profunda</i> (Dall)	34N–33N
13 Ma–H	<i>Glycymeris (Axinola) septentrionalis</i> Middendorff	<i>Glycymeris septentrionalis</i> Middendorff	60N–25N; intertidal to 400 m
13 Ma–H	<i>Glycymeris (Axinola) septentrionalis</i> Middendorff	<i>Glycymeris (Axinola) subobsoleta</i> (Carpenter)	60N–25N
13 Ma–H	<i>Glycymeris (Axinola) septentrionalis</i> Middendorff	<i>Glycymeris (Tucetona?) septentrionalis</i> (Middendorff)	60N–25N
13 Ma–H	<i>Glycymeris (Axinola) septentrionalis</i> Middendorff	<i>Glycymeris septentrionalis</i> (Middendorff)	60N–25N
13 Ma–H	<i>Glycymeris (Axinola) septentrionalis</i> Middendorff	<i>Glycymeris subobsoleta</i> Carpenter	60N–25N
27–13 Ma	<i>Glycymeris (Glycymeris) branneri</i> Arnold	<i>Glycymeris branneri</i> Arnold	Subgenus, 31N–4S
5–2.5 Ma	<i>Glycymeris (Glycymeris) gabbi</i> Dall	<i>Glycymeris gabbi</i> Dall	Subgenus, 31N–4S
13 Ma–H	<i>Glycymeris (Glycymeris) gigantea</i> (Reeve)	<i>Glycymeris gigantea</i> Reeve	31N–25N; 5 to 20 m
13? or 5 Ma–H	<i>Glycymeris (Glycymeris) maculata</i> (Broderip)	<i>Glycymeris (Glycymeris) maculata</i> (Broderip)	31N–4S
23–13 Ma	<i>Glycymeris (Glycymeris?) cf. G. (G.?) whaleyi</i> Nicol	<i>Glycymeris cf. G. whaleyi</i> Nicol	Subgenus, 31N–4S
17 Ma–H	<i>Glycymeris (Tucetona) n.sp. aff. G. (T.) multicostata</i> (Sowerby)	<i>Glycymeris (Tucetona) n.sp. aff. G. (T.) multicostata</i> (Sowerby)	31N in Gulf of California–3S; in depths to 90 m
N.D.	<i>Glycymeris (Tucetona) sp.</i>	<i>Tucetona (Bellaxinaea) n.sp.</i> Powell	Subgenus, 31N–3S
N.D.	<i>Glycymeris sp.</i>	<i>Glycymeris sp.</i>	Genus, 60N–4S, Pacific; 35N–15N, Atlantic; intertidal to 400 m
8 Ma–H	<i>Glyphostoma cf. G. gabrielense</i> Pilsbry	<i>Glyphostoma cf. G. gabrielense</i> Pilsbry	Genus, 37N–5N; 20 to 280 m
5 Ma–H	<i>Glyphostoma conradiana</i> Gabb	<i>Glyphostoma conradiana</i> (Gabb)	37N–33N
5 Ma–H	<i>Glyphostoma conradiana</i> Gabb	<i>Glyphostoma conradiana</i> Gabb	37N–33N
13? or 8 Ma–H	<i>Glyptaesopus oldroydi</i> (Arnold)	<i>Lora oldroydi</i> (Arnold)	27N–25N; 5 to 10 m
N.D.	<i>Glyptaesopus sp.</i>	<i>Mangelia sp.</i>	Genus, 27N–3S, through Gulf of California; sandflats at low tide to 20 m
N.D.	<i>Gonidea sp.</i>	<i>Gonidea sp.</i>	Freshwater
5–2.5 Ma	<i>Goniobasis kettlemanensis</i> Arnold	<i>Goniobasis kettlemanensis</i> Arnold	Freshwater
17–8 Ma	<i>Goniobasis rodeoensis</i> (Clark)	<i>Cerithium rodeoensis</i> Clark	Freshwater
13? or 5 Ma–H	<i>Gouldia californica</i> Dall	<i>Gouldia californica</i> Dall	26N–8N; mostly offshore to 160 m
5 Ma–H	<i>Gregariella chenui</i> (Recluz)	<i>Gregariella chenui</i> (Recluz)	37N–5S; 30 to 90 m
8–2.5 Ma	<i>Gyrineum elsmerense</i> English	“ <i>Gyrineum</i> ” cf. “ <i>G.</i> ” <i>elsmerense</i> English	Genus not living
8–2.5 Ma	<i>Gyrineum elsmerense</i> English	<i>Cymatium elsmerense</i> (English)	Genus not living
8–2.5 Ma	<i>Gyrineum elsmerense</i> English	<i>Gyrineum elsmerense</i> Arnold	Genus not living
N.D.	<i>Gyrineum sp.</i>	<i>Gyrineum sp.</i>	Genus not living
13? or 5 Ma–H	<i>Haliotis (Padollus) pourtalesii</i> Dall	<i>Haliotis (Padollus) pourtalesii</i> Dall	25N, Florida; 164 m
5 Ma–H	<i>Haliotis (Sulculus) rufescens</i> Swainson	<i>Haliotis (Sulculus) rufescens</i> Swainson	42N–23N
5 Ma–H	<i>Haliotis assimilis</i> Dall	<i>Haliotis cf. H. kamtschatkana assimilis</i> Dall	37N–33N
5 Ma–H	<i>Haliotis assimilis</i> Dall	<i>Haliotis assimilis</i> Dall?	37N–33N; relatively deep water
8 Ma–H	<i>Haliotis fulgens</i> Philippi	<i>Haliotis fulgens</i> Philippi	38N–23N; low tide to 8 m
13–8 Ma	<i>Haliotis lasia</i> Woodring	<i>Haliotis lasia</i> Woodring	Genus, 57N–23N; intertidal to 92 m, on rocks
13–8 Ma	<i>Haliotis palaea</i> Woodring	<i>Haliotis palaea</i> Woodring	Genus, 57N–23N; intertidal to 92 m, on rocks
N.D.	<i>Haliotis sp.</i>	<i>Haliotis sp.</i>	Genus, 57N–23N
13 Ma–H	<i>Halistylus pupoideus</i> (Carpenter)	<i>Halistylus pupoideus</i> (Carpenter)	55N–8N; 18 m to 73 m
17 M–Ha	<i>Haminoea virescens</i> Sowerby	<i>Haminoea virescens</i> Sowerby	55N–3N; intertidal to 18 m, on rocks and algae
17–13 Ma	<i>Hastula gnomon</i> Keen	<i>Hastula gnomon</i> Keen	Genus, 20N–3N; intertidal to 110 m
13? or 5–2.5 Ma	<i>Heliacrus rotundata</i> (Gabb)	<i>Heliacrus rotundata</i> (Gabb)	Genus, 34N–3S; extreme low tide to 2320 m
N.D.	<i>Helisoma (Carinifex) sp.</i>	<i>Carinifex sp.</i>	Freshwater
13? or 5–2.5 Ma	<i>Hemitoma (Montfortia) emarginata</i> Blainville	<i>Hemitoma (Montfortia) emarginata</i> Blainville	Subgenus, 25N–20N; 18 to 73 m
27 Ma–H	<i>Here (Here) excavata</i> (Carpenter)	<i>Here excavata</i> (Carpenter)	34.4N–24.4N; 25 to 125 m
27 Ma–H	<i>Here (Here) excavata</i> (Carpenter)	<i>Lucina (Here) excavata</i> Carpenter	34N–24N
27 Ma–H	<i>Here (Here) excavata</i> (Carpenter)	<i>Lucina (Here) richthofeni</i> Gabb	34N–24N
27 Ma–H	<i>Here (Here) excavata</i> (Carpenter)	<i>Lucina excavata</i> Carpenter	34N–24N
27 Ma–H	<i>Here (Here) excavata</i> (Carpenter)	<i>Lucina richthofeni</i> Gabb	34N–24N
27 Ma–H	<i>Here (Here) excavata</i> (Carpenter)	<i>Phacoides (Here) richthofeni</i> Gabb	34N–24N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27 Ma–H 23–17 Ma	<i>Here (Here) excavata</i> (Carpenter) <i>Here (Here) excavata</i> (Carpenter) <i>temblorensis</i> Adegoke	<i>Phacoides richthofeni</i> Gabb <i>Lucina (Here) excavata temblorensis</i> Adegoke	34N–24N Species, 34N–24N
5 Ma–H N.D.	<i>Hesperato vitellina</i> (Hinds) <i>Hespercidaris?</i> sp. (Echinodermata)	<i>Hesperato vitellina</i> (Hinds) <i>Hespercidaris?</i> sp. (Echinodermata)	38N–24N Gulf of California–3S
5 Ma–H	<i>Hesperocidaris perplexa</i> (Clark)	<i>Hesperocidaris perplexa</i> H. L. Clark	Gulf of California–19N
5 Ma–H N.D.	<i>Hiatella arctica</i> Linnaeus <i>Hiatella?</i> sp.	<i>Hiatella arctica</i> Linnaeus <i>Hiatella?</i> sp.	71.4N–10N; low tide to sublittoral, intertidal to 1190 m Genus, 71N–10N; intertidal to 1190 m
17 Ma–H N.D.	<i>Hipponix</i> cf. <i>H. pilosus</i> (Deshayes) <i>Hipponix</i> sp. in Loel and Corey (1932)	<i>Hipponix</i> cf. <i>H. barbatus</i> Sowerby <i>Hipponix</i> sp. Loel and Corey	Gulf of California–3S Genus, 48N–3S, and Gulf of California; intertidal to 73 m
5 Ma–H N.D.	<i>Hipponix tumens</i> Carpenter <i>Hipponix?</i> sp.	<i>Hipponix tumens</i> Carpenter <i>Hipponix?</i> sp.	42N–24N Genus, 48N–3S, and Gulf of California
13? or 5–2.5 Ma	<i>Homalopoma (Leptothyropsis) maiqueutiana</i> (Weisbord)	<i>Homalopoma (Leptothyropsis) maiqueutiana</i> (Weisbord)	Genus, 57N–8N; intertidal to 92 m
5 Ma–H 13–8 Ma	<i>Homalopoma</i> cf. <i>H. luridum</i> (Dall) <i>Homalopoma danvillensis</i> (Clark)	<i>Homalopoma</i> cf. <i>H. carpenteri</i> (Pilsbry) <i>Leptothyra pabloensis</i> Clark (sic <i>Leptothyra</i> <i>danvillensis</i> Clark)	57N–28N; low tide to sublittoral Genus, 57N–8N
5 Ma–H 5–2.5 Ma N.D.	<i>Homalopoma paucicostatum</i> (Dall) <i>Homalopoma radiatum</i> (Dall) <i>Homalopoma?</i> sp.	<i>Homalopoma paucicostatum</i> (Dall) <i>Homalopoma radiatum</i> (Dall) <i>Homalopoma?</i> sp.	37N–31N, sublittoral Genus, 57N–31N Genus, 57N–8N
17 Ma–H	<i>Hormospira</i> cf. <i>H. maculosa</i> (Sowerby)	<i>Turricula</i> cf. <i>T. maculosa</i> (Sowerby)	Gulf of California–3S; to depths of 30 m on sandy substrate
5–2.5 Ma	<i>Humilaria pertaminosa</i> (Conrad) (Arnold, 1907a)	<i>Humilaria perlaminosa</i> (Conrad)? (Arnold, 1907a)	Genus, 60N–37N; intertidal to 37 m
5 Ma–H 13 Ma–H 13 Ma–H	<i>Huxleyia munita</i> (Dall) <i>Irusella lamellifera</i> (Conrad) <i>Irusella lamellifera</i> (Conrad)	<i>Huxleyia munita</i> (Dall) <i>Irusella lamellifera</i> (Conrad) <i>Irus lamellifer</i> (Conrad) var. <i>prelamellifer</i> Grant and Gale	48.1N–27.2N; 37 or 70 to 750 39.7N–30.5N; intertidal to 100 m 40N–31N
13? or 8 Ma–H 13? or 8 Ma–H 27–23 Ma	<i>Iselica ovoidea</i> (Gould) <i>Iselica ovoidea</i> (Gould) <i>Isognomon (Isognomon) panzana</i> (Loel and Corey)	<i>Iselica fenestrata</i> (Carpenter) <i>Liotia carinata</i> Carpenter <i>Pedalion panzana</i> Loel and Corey	48N–23N 48N–23N Genus, 34N–2S; intertidal and shallow water
5 Ma–H	<i>Isoorbitella diegoana</i> (Hertlein and Grant) (Moore, 1992)	<i>Aligena (Aligena) diegoana</i> Hertlein and Grant (Moore, 1992)	Genus, 33.6N–23.2N, through Gulf of California
13 Ma–H 13–2.5 Ma 23? or 17 Ma–H	<i>Jouannetia pectinata</i> (Conrad) <i>Juliacorbula aequivalvis fossilis</i> (Pilsbry) <i>Juliacorbula luteola</i> (Carpenter)	<i>Pholadopsis pectinata</i> Conrad <i>Corbula (Juliacorbula) aequivalvis fossilis</i> Pilsbry <i>Corbula luteola</i> Carpenter	32N–7S; burrowing into rock Genus, 37N–2S 36.7N–22.9N, Gulf of California; rocky rubble, low tide, sublittoral to 60 m
23? or 17 Ma–H 23? or 17 Ma–H	<i>Juliacorbula luteola</i> (Carpenter) <i>Juliacorbula luteola</i> (Carpenter)	<i>Corbula (Lentidium) luteola</i> Carpenter <i>Corbula (Caryocorbula) luteola</i> Carpenter	37N–23N 37N–23N
13–5 Ma 13–5 Ma	<i>Kelletia (Kelletia) danvillensis</i> (Clark) <i>Kelletia (Kelletia) danvillensis</i> (Clark)	<i>Kelletia danvillensis</i> (Clark) <i>Siphonalia danvillensis</i> Clark	Genus, 34N–30N; intertidal to 37 m Genus, 34N–30N
13 Ma–H 13 Ma–H	<i>Kelletia (Kelletia) kelletii</i> (Forbes) <i>Kelletia (Kelletia) kelletii</i> (Forbes)	<i>Kelletia kelletii</i> (Forbes) <i>Kelletia (Kelletia) kelletii</i> (Forbes)	34N–30N; intertidal to 37 m 34N–30N
8–5 Ma 8–5 Ma	<i>Kelletia (Kelletia) kettlemanensis</i> (Arnold) <i>Kelletia (Kelletia) kettlemanensis</i> (Arnold)	<i>Kelletia (Kelletia) kettlemanensis</i> (Arnold) <i>Siphonalia kettlemanensis</i> (Arnold)	Genus, 34N–30N; intertidal to 37 m Genus, 34N–30N

8–5 Ma	<i>Kelletia (Kelletia) kettelmanensis</i> (Arnold)	<i>Thais kettelmanensis</i> Arnold	Genus, 34N–30N
13–8 Ma	<i>Kelletia (Kelletia) rodeoensis</i> (Trask)	<i>Siphonalia rodeoensis</i> Trask	Genus, 34N–30N
N.D.	<i>Kelletia (Kelletia)</i> sp.	<i>Siphonalia</i> sp.	Genus, 34N–30N
5–2.5 Ma	<i>Kelletia gilberti</i> (Moody)	<i>Siphonalia gilberti</i> Moody	Genus, 34N–30N
17–13 Ma	<i>Kelletia kernensis</i> (Anderson and Martin)	<i>Siphonalia kernensis</i> (Anderson and Martin)	Genus, 34N–30N
17–13 Ma	<i>Kelletia lorata</i> Addicott	<i>Kelletia lorata</i> Addicott	Genus, 34N–30N
27–13 Ma	<i>Kelletia posoensis</i> (Anderson and Martin)	<i>Siphonalia posoensis</i> Anderson and Martin	Genus, 34N–30N
27–13 Ma	<i>Kelletia posoensis</i> (Anderson and Martin)	<i>Kelletia posoensis</i> (Anderson and Martin)	Genus, 34N–30N
N.D.	<i>Kelletia</i> sp.	<i>Siphonalia</i> sp.	Genus, 34N–30N
13? or 8–5 Ma	<i>Kelletia vladimiri</i> Kanakoff	<i>Kelletia vladimiri</i> Kanakoff	Genus, 34N–30N
N.D.	<i>Kelletia?</i> sp.	<i>Siphonalia</i> sp.	Genus, 34N–30N
5 Ma–H	<i>Kellia suborbicularis</i> (Montagu)	<i>Kellia laperousii</i> (Deshayes)	60.8N–3.7S; intertidal to 20 m (also reported to 64 m)
5 Ma–H	<i>Kellia suborbicularis</i> (Montagu)	<i>Kellia laperousii</i> Deshayes	61N–4S
17–10 Ma	<i>Kewia blancoensis</i> (Kew) (Echinodermata)	<i>Kewia blancoensis</i> (Kew) (Echinodermata)	Genus not living
27–23 Ma	<i>Kewia fairbanksi</i> (Arnold)	<i>Echinarachnius fairbanksi</i> Arnold	Genus not living
27–23 Ma	<i>Kewia fairbanksi</i> (Arnold)	<i>Kewia fairbanksi</i> (Arnold)	Genus not living
27–23 Ma	<i>Kewia fairbanksi</i> (Arnold)	<i>Scutella fairbanksi</i> (Arnold)	Genus not living
27–23 Ma	<i>Kewia fairbanksi</i> (Arnold)	<i>Scutella fairbanksi</i> Arnold	Genus not living
27–23 Ma	<i>Kewia fairbanksi</i> (Arnold)	<i>Vaquerosella fairbanksi</i> (Arnold)	Genus not living
27–23 Ma	<i>Kewia fairbanksi santanensis</i> (Kew)	<i>Echinarachnius fairbanksi santanensis</i> Kew	Genus not living
27–23 Ma	<i>Kewia fairbanksi santanensis</i> (Kew)	<i>Scutella fairbanksi</i> (Arnold) <i>santanensis</i> Kew	Genus not living
27–23 Ma	<i>Kewia fairbanksi santanensis</i> (Kew)	<i>Kewia?</i> <i>fairbanksi santanensis</i> (Kew)	Genus not living
N.D.	<i>Kewia</i> sp.	<i>Echinarachnius</i> sp.	Genus not living
17 Ma–H	<i>Knefastia</i> cf. <i>K. funiculata</i> (Valenciennes)	<i>Knefastia</i> cf. <i>K. funiculata</i> (Valenciennes)	24N–15N; offshore to depths of 50 m
23–13 Ma	<i>Knefastia garcesana</i> Addicott	<i>Knefastia garcesana</i> Addicott	Genus, 28N–3S; low tide to depths of 70 m
13 Ma–H	<i>Knefastia olivacea</i> (Sowerby)	<i>Knefastia olivacea</i> (Sowerby)	28N in Gulf of California–3S; at low tide to depths of 50 m
N.D.	<i>Knefastia</i> sp.	<i>Knefastia</i> sp.	Genus, 28N–3S
23–17 Ma	<i>Lacuna carpenteri</i> Anderson and Martin	<i>Lacuna carpenteri</i> Anderson and Martin	Genus, 64N–19N; intertidal to 366 m, in eelgrass and algae
5 Ma–H	<i>Lacuna</i> cf. <i>L. carinata</i> Gould	<i>Lacuna</i> cf. <i>L. carinata</i> Gould	48N–33N
5 Ma–H	<i>Lacuna</i> cf. <i>L. divaricata</i> Fabricus	<i>Lacuna</i> cf. <i>L. divaricata</i> Fabricus	64N–34N
N.D.	<i>Lacuna</i> sp.	<i>Lacuna</i> sp.	Genus, 64N–19N
5 Ma–H	<i>Lacuna vincta</i> Montagu	<i>Lacuna vincta</i> Montagu	64N–48N
5 Ma–H	<i>Laevicardium</i> cf. <i>L. substriatum</i> (Conrad)	<i>Laevicardium</i> cf. <i>L. substriatum</i> (Conrad)	34N–24N; intertidal to 40 or 137 m, on sand bottoms, in bays
5 Ma–H	<i>Laqueus californianus</i> (Koch) (Brachiopoda)	<i>Laqueus californianus</i> Koch (Brachiopoda)	48N–33N
N.D.	<i>Laqueus</i> sp.	<i>Laqueus</i> sp.	Genus, 48N–33N
5–2.5 Ma	<i>Laqueus vancouverensis diegensis</i> Hertlein and Grant	<i>Laqueus vancouverensis diegensis</i> Hertlein and Grant	Genus, 48N–33N
8–2.5 Ma	<i>Larkinia camuloensis</i> (Osmont)	<i>Anadara camuloensis</i> (Osmont)	Genus, 34N–0; depths to 128 m
8–2.5 Ma	<i>Larkinia camuloensis</i> (Osmont)	<i>Anadara (Larkinia) camuloensis</i> (Osmont)	Genus, 34N–0
8–2.5 Ma	<i>Larkinia multicostata</i> (Sowerby)	<i>Anadara multicostata</i> (Sowerby)	34N–0; sandbars at low tide, free upon substrate, to 128 m
5 Ma–H	<i>Larkinia multicostata</i> (Sowerby)	<i>Arca (Arca) multicostata</i> Sowerby	34N–0
27–23 Ma	<i>Larkinia santana santana</i> (Loel and Corey)	<i>Anadara santana</i> (Loel and Corey)	Genus, 34N–0
27–23 Ma	<i>Larkinia santana santana</i> (Loel and Corey)	<i>Anadara (Larkinia) santana</i> (Loel and Corey)	Genus, 34N–0
27–23 Ma	<i>Larkinia santana santana</i> (Loel and Corey)	<i>Arca (Anadara) santana</i> Loel and Corey	Genus, 34N–0
27–23 Ma	<i>Larkinia santana weddlei</i> (Loel and Corey)	<i>Arca (Anadara) santana weddlei</i> Loel and Corey	Genus, 34N–0
8–5 Ma	<i>Lasaea subviridis</i> Dall (Moore, 1992)	<i>Lasaea adansonii</i> (Gmelin) (Moore, 1992)	57.1N–6.7S
17–13 Ma	<i>Leperometis obesa</i> (Deshayes)	<i>Psammotreata obesa</i> (Deshayes)	35N–25N
N.D.	<i>Lepeta</i> sp.	<i>Lepton</i> sp.	Genus, 72N–37N
13 Ma–H	<i>Leporimetis cognata</i> (Pilsbry and Vanatta)	<i>Metis excavata</i> Sowerby	30N–4S; <i>Florimetis dombei</i> (Keen, 1971, p. 227)
8 Ma–H	<i>Leporimetis dombei</i> (Hanley)	<i>Apolymetis</i> cf. <i>A. dombei</i> (Hanley)	9N–4S; to depths of 22 m
27 Ma–H	<i>Leporimetis obesa</i> (Deshayes)	<i>Apolymetis biangulata</i> (Carpenter)	35N–25N; placed in <i>Florimetis</i> by McLean (1978, p. 84)

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27 Ma–H	<i>Leporimetis obesa</i> (Deshayes)	<i>Florimetis biangulata</i> (Carpenter)	34.5N–24.6N; sand and gravel along rocky areas, subtidal to 50 m
27 Ma–H	<i>Leporimetis obesa</i> (Deshayes)	<i>Metis alta</i> Conrad	35N–25N
27 Ma–H	<i>Leporimetis obesa</i> (Deshayes)	<i>Psammotreata</i> (<i>Florimetis</i>) <i>biangulata</i> (Carpenter)	35N–25N
27 Ma–H	<i>Leporimetis obesa</i> (Deshayes)	<i>Psammotreata obesa</i> (Deshayes)	35N–25N
27–23 Ma	<i>Leporimetis rostellata</i> (Clark)	<i>Heteromacoma rostellata</i> (Clark)	Genus, 35N–25N; intertidal to 50; gravel, bays, rocky coastlines
27–23 Ma	<i>Leporimetis rostellata</i> (Clark)	<i>Florimetis rostellata</i> (Clark)	Genus, 35N–25N
N.D.	<i>Leporimetis</i> sp.	<i>Apolymetis</i> sp.	Genus, 35N–25N
N.D.	<i>Leporimetis</i> sp.	<i>Florimetis</i> sp.	Genus, 35N–25N
N.D.	<i>Leporimetis</i> sp.	<i>Metis</i> sp.	Genus, 35N–25N
N.D.	<i>Lepton?</i>	<i>Lepton?</i>	Genus, 23N south
8–5 Ma	<i>Leptopecten bellilamellatus</i> (Arnold)	<i>Pecten</i> (<i>Leptopecten</i>) <i>bellilamellatus</i> (Arnold)	Genus, 38N–23N; rocks, bays, on debris offshore, 5 to 220 m
8–5 Ma	<i>Leptopecten bellilamellatus</i> (Arnold)	<i>Pecten</i> (<i>Leptopecten</i>) <i>latiauratus</i> Conrad	Genus, 38N–23N
5 Ma–H	<i>Leptopecten latiauratus</i> (Conrad) 5 Ma– Holocene	<i>Pecten</i> (<i>Aequipecten</i>) <i>latiauratus</i> Conrad	38N–23N; intertidal to 250 m
5 Ma–H	<i>Leptopecten latiauratus</i> (Conrad) 5 Ma– Holocene	<i>Chlamys</i> (<i>Leptopecten</i>) <i>latiaurata</i> Conrad	38N–23N
5 Ma–H	<i>Leptopecten latiauratus</i> (Conrad) 5 Ma– Holocene	<i>Pecten latiauritus</i> Conrad	38N–23N
5 Ma–H	<i>Leptopecten latiauratus</i> (Conrad) 5 Ma– Holocene	<i>Leptopecten latiauratus</i> (Conrad) (not found in collections)	38N–23N
N.D.	<i>Letechinus</i> sp. (Echinodermata)	<i>Letechinus</i> sp. (Echinodermata)	Genus, 33N–3S
N.D.	<i>Lima</i> (<i>Lima</i>) sp.	<i>Lima</i> sp.	Subgenus, 30N–2S; 9 to 110 m, free swimming or in nets
13–8 Ma	<i>Lima</i> (<i>Lima</i>) <i>vedderi</i> Moore	<i>Lima vedderi</i> Moore	Subgenus, 30N–2S
13 Ma–H	<i>Lima caribbaea</i> (d'Orbigny)	<i>Lima caribbaea</i> (d'Orbigny)	Genus, s.l., western Atlantic, 35N–15N, deep water
N.D.	<i>Lima</i> sp.	<i>Lima</i> sp.	Questionable taxonomic assignment
17 Ma–H	<i>Limaria</i> cf. <i>L. hemphilli</i> (Hertlein and Strong)	<i>Lima</i> cf. <i>L. dehiscens</i> Conrad	37N–17N
17 Ma–H	<i>Limaria hemphilli</i> (Hertlein and Strong)	<i>Lima hemphilli</i> Hertlein and Strong	36.6N–9N; intertidal to 100 m
5–2.5 Ma	<i>Limaria orcutti</i> (Hertlein and Grant)	<i>Lima</i> (<i>Limaria</i>) <i>orcutti</i> Hertlein	Genus, 37N–9N; intertidal to 100 m
N.D.	<i>Limaria</i> sp.	<i>Limaria</i> sp.	Genus, 37N–9N
5 Ma–H	<i>Limatula</i> (<i>Limatula</i>) aff. <i>L. (L.) satuma</i> (Bernard)	<i>Limatula</i> aff. <i>L. subauriculata</i> (Montagu)	56.5N–22.9N; 30 to 675 m
5 Ma–H	<i>Limatula</i> (<i>Limatula</i>) aff. <i>L. (L.) satuma</i> (Bernard)	<i>Limatula</i> aff. <i>L. "subauriculata"</i> (Montagu)"	57N–23N
N.D.	<i>Limatula</i> sp.	<i>Limatula</i> sp.	Genus, 57N–9S
5–2.5 Ma	<i>Limopsis</i> (<i>Felicia</i>) <i>phrear</i> Woodring	<i>Limopsis phrear</i> Woodring	Subgenus, 56S–33S
23–17 Ma	<i>Limopsis nitens</i> (Conrad)	<i>Limopsis nitens</i> (Conrad)	Genus, 54N–6N; 55 to 1464 m
N.D.	<i>Lingula</i> sp.? (Brachiopoda)	<i>Lingula</i> sp. (Brachiopoda)	Questionable taxonomic assignment
27–23 Ma	<i>Linthia</i> sp.	<i>Linthia</i> n.sp.	Genus not living, Eocene to late Oligocene or early Miocene in California
13 Ma–H	<i>Liocerithium judithae</i> Keen	<i>Cerithium incisum</i> Sowerby	25N–23N, through Gulf of California; intertidal under rocks
17–13 Ma	<i>Lioglyphostoma carinata</i> (Addicott)	<i>Glyphostoma carinata</i> Addicott	Genus, 37N–5N and Gulf of California; 30 to 120 m
N.D.	<i>Liomesus</i> sp.	<i>Liomesus</i> sp.	Genus, 72N–55N; 18 to 220 m
5 Ma–H	<i>Lirabuccinum dira</i> (Reeve) (Vermeij, 1991)	<i>Chrysodomus dirus meridiei</i> Moody	56N–37N; intertidal, on rocks.
5–2.5 Ma	<i>Lirabuccinum portolaensis</i> (Arnold) (Vermeij, 1991)	<i>Chrysodomus portolaensis</i> Arnold	Genus, 56N–37N; intertidal, on rocks
13 Ma–H	<i>Lithophaga</i> (<i>Diberus</i>) <i>plumula</i> (Hanley)	<i>Lithophaga plumula</i> (Hanley)	36.6N–1S, in Gulf of California; boring, <i>Spondylus</i> and corals, to 40 m

13 Ma–H	<i>Lithophaga (Diberus) plumula</i> (Hanley)	<i>Lithophaga (Diberus) plumula</i> (Hanley)	37N–1S, also in Gulf of California; intertidal to 40 m
N.D.	<i>Lithophaga</i> sp.	<i>Lithophaga</i> sp.	Genus, 40N–5S, through Gulf of California; intertidal to 46 m, boring
23–13 Ma	<i>Litorhadia astoriana</i> (Henderson)	<i>Nuculana impressa</i> (Conrad)	Genus not living
23–13 Ma	<i>Litorhadia astoriana</i> (Henderson)	<i>Litorhadia astoriana</i> (Henderson)	Genus not living
13–2.5 Ma	<i>Littorina mariana</i> Arnold	<i>Littorina mariana</i> Arnold	Genus, 72N–5S; intertidal, on rocks near high-tide line
5–2.5 Ma	<i>Littorina petricola</i> Dall	<i>Littorina petricola</i> Dall	Genus, 72N–5S
13 Ma–H	<i>Littorina planaxis</i> Philippi	<i>Littorina planaxis</i> Philippi	48N–0; “rocky reefs” in splash zone
17–5 Ma	<i>Littorina remondii</i> Gabb	<i>Littorina remondii</i> Gabb	Genus, 72N–5S
5 Ma–H	<i>Littorina scutulata</i> Gould	<i>Littorina scutulata</i> Gould	58N–19N
8 Ma–H	<i>Littorina scutulata</i> Gould	<i>Littorina scutulata</i> Gould	58N–19N; upper intertidal
N.D.	<i>Littorina</i> sp.	<i>Littorina</i> sp.	Genus, 72N–5S, abundant on rocky reefs in the splash zone
13 Ma–H	<i>Littorina varia</i> Sowerby	<i>Littorina varia</i> Sowerby	8N–5S
8–2.5 Ma	<i>Lituyapecten</i> aff. <i>L. coosensis</i> (Shumard) 8–2.5 Ma	<i>Pecten (Patinopecten)</i> aff. <i>P. (P.) coosensis</i> Shumard	Genus not living
8–2.5 Ma	<i>Lituyapecten</i> cf. <i>L. coosensis</i> (Shumard) 8–2.5 Ma	<i>Patinopecten</i> cf. <i>P. coosensis</i> (Shumard)	Genus not living
8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall) 8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall)	Genus not living
8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall) 8–2.5 Ma	<i>Lyropecten dilleri</i> Dall	Genus not living
8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall) 8–2.5 Ma	<i>Patinopecten dilleri</i> (Dall)	Genus not living
8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall) 8–2.5 Ma	<i>Pecten (Lituyapecten) dilleri</i> Dall	Genus not living
8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall) 8–2.5 Ma	<i>Pecten (Patinopecten) dilleri</i> Dall	Genus not living
8–2.5 Ma	<i>Lituyapecten dilleri</i> (Dall) 8–2.5 Ma	<i>Pecten dilleri</i> Dall	Genus not living
8–5 Ma	<i>Lituyapecten falorensis</i> (MacNeil) 8–5 Ma	<i>Patinopecten (Lituyapecten) falorensis</i> MacNeil	Genus not living
8–2.5 Ma	<i>Lituyapecten purisimaensis</i> (Arnold) 8–2.5 Ma	<i>Patinopecten purisimaensis</i> (Arnold)	Genus not living
8–2.5 Ma	<i>Lituyapecten purisimaensis</i> (Arnold) 8–2.5 Ma	<i>Pecten (Patinopecten) purisimaensis</i> Arnold	Genus not living
8–2.5 Ma	<i>Lituyapecten turneri</i> (Arnold) 8–2.5 Ma	<i>Patinopecten (Lituyapecten) turneri</i> (Arnold)	Genus not living
13 Ma–H	<i>Lopha angelica</i> (Rocheburne)	<i>Myrakeenae angelica</i> (Rocheburne)	29N–3S
13–8 Ma	<i>Lopha angermanni</i> (Hertlein and Jordan)	<i>Myrakeenae angermanni</i> (Hertlein and Jordan)	Genus, 29N–3S
5 Ma–H	<i>Lora harpularia</i> (Couthouy)	<i>Lora harpularia</i> (Couthouy)	72N–37N
5–2.5 Ma	<i>Lora sanctaemonicae</i> (Arnold)	<i>Bela santae-monicae</i> Arnold	Genus, 73N–30N
N.D.	<i>Lora</i> sp.	<i>Propebela</i> sp.	Genus, 73N–30N
N.D.	<i>Lora</i> sp.	<i>Bela</i> sp.	Genus, 73N–30N
5 Ma–H	<i>Lora turricula</i> (Montagu)	<i>Lora turricula</i> (Montagu)	72N–48N
5 Ma–H	<i>Lora viridula</i> (Fabricius)	<i>Lora viridula</i> (Fabricius)	72N–37N; 591 m
5–2.5 Ma	<i>Lovenia hemphilli</i> Israelsky (Echinodermata)	<i>Lovenia hemphilli</i> Israelsky (Echinodermata)	Genus, 34N–3N
17–13 Ma	<i>Lucina (Luciniscia) menuda</i> (Keen)	<i>Luciniscia menuda</i> Keen	Subgenus, 37N–5S; intertidal to 82 m, in sand
8–2.5 Ma	<i>Lucina (Luciniscia) nuttallii antecedens</i> Arnold	<i>Luciniscia (Luciniscia) nuttallii antecedens</i> Arnold	Species, 37N–22N; sandflats at low tide and offshore
8–2.5 Ma	<i>Lucina (Luciniscia) nuttallii antecedens</i> Arnold	<i>Lucina nuttallii antecedens</i> (Arnold)	Species, 37N–22N
27 Ma–H	<i>Lucina (Luciniscia) nuttallii</i> Conrad	<i>Lucina (Luciniscia) nuttallii</i> Conrad	36.7N–22.4N; intertidal to 46 m, also reported as 10 to 75 m, in sand
27 Ma–H	<i>Lucina (Luciniscia) nuttallii</i> Conrad	<i>Lucina (Myrtea) nuttallii</i> Conrad	37N–22N
27 Ma–H	<i>Lucina (Luciniscia) nuttallii</i> Conrad	<i>Lucina nuttallii</i> Conrad	37N–22N
27 Ma–H	<i>Lucina (Luciniscia) nuttallii</i> Conrad	<i>Luciniscia nuttallii</i> (Conrad)	37N–22N
N.D.	<i>Lucina (Luciniscia) sp.</i>	<i>Phacoides nuttallii</i> (Conrad)	37N–22N
N.D.	<i>Lucina (Pleurolucina) n.sp.</i> Powell	<i>Luciniscia</i> sp.	Subgenus, 37N–5S
N.D.	<i>Lucina</i> sp.	<i>Lucina (Pleurolucina) n.sp.</i> Powell	Subgenus, 31N–22N; 7 to 70 m
27–23 Ma	<i>Lucina wattsi</i> Loel and Corey	<i>Lucina</i> sp.	Questionable taxonomic assignment
N.D.	<i>Lucina?</i> sp.	<i>Lucina wattsi</i> Loel and Corey?	If subgenus <i>Callucina</i> , 31N–16N; intertidal to 55 m
		<i>Lucina?</i> sp.	Questionable taxonomic assignment

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Lucina</i> (<i>Lucinoma</i>) <i>acutilineata</i> Conrad	Genus, 61N–24N, through Gulf of California; 55 to 1836 m
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Lucina</i> (<i>Mytrea</i>) <i>acutilineata</i> Conrad	Genus, 61N–24N, through Gulf of California
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Lucina acutilineata</i> Conrad	Genus, 61N–24N, through Gulf of California
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Lucina borealis</i> Lamarck	Genus, 61N–24N, through Gulf of California
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Lucinoma acutilineata</i> (Conrad)	Genus, 61N–24N, through Gulf of California
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Lucinoma acutilineatus</i> (Conrad)	Genus, 61N–24N, through Gulf of California
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Phacoides</i> (<i>Lucinoma</i>) <i>acutilineatus</i> Conrad	Genus, 61N–24N, through Gulf of California
27–2.5 Ma	<i>Lucinoma acutilineata</i> (Conrad)	<i>Phacoides acutilineatus</i> Conrad	Genus, 61N–24N, through Gulf of California
5 Ma–H	<i>Lucinoma</i> aff. <i>L. aequizonata</i> (Stearns)	<i>Lucinoma</i> aff. <i>L. aequizonata</i> (Stearns)	34.4N–34N; 400 to 650 m
23 Ma–H	<i>Lucinoma annulata</i> (Reeve)	<i>Lucina</i> (<i>Lucinoma</i>) <i>annulata</i> Reeve	60.8N–25.7N, through Gulf of California; intertidal to 665
23 Ma–H	<i>Lucinoma annulata</i> (Reeve)	<i>Lucina annulata</i> (Reeve)	61N–26N, through Gulf of California
23 Ma–H	<i>Lucinoma annulata</i> (Reeve)	<i>Lucinoma annulata</i> (Reeve)	61N–26N, through Gulf of California
23 Ma–H	<i>Lucinoma annulata</i> (Reeve)	<i>Phacoides annulata</i> Reeve	61N–26N, through Gulf of California
23 Ma–H	<i>Lucinoma annulata</i> (Reeve)	<i>Phacoides annulatus</i> (Reeve)	61N–26N, through Gulf of California
23 Ma–H	<i>Lucinoma annulata</i> (Reeve)	<i>Phacoides annulatus</i> Conrad	61N–26N, through Gulf of California
N.D.	<i>Lucinoma</i> sp.	<i>Lucinoma</i> sp.	Genus, 61N–24N, through Gulf of California; intertidal to 1836 m
5 Ma–H	<i>Lyonsia californica</i> Conrad	<i>Lyonsia californica</i> Conrad	55N–17N; intertidal to 128 m, beneath surface of mud substrate
13–5 Ma	<i>Lyropecten catalinae</i> (Arnold) 13–5 Ma	<i>Lyropecten estrellanus</i> (Conrad)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–5 Ma	<i>Lyropecten catalinae</i> (Arnold) 13–5 Ma	<i>Pecten estrellanus</i> Conrad <i>catalinae</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–5 Ma	<i>Lyropecten catalinae</i> (Arnold) 13–5 Ma	<i>Lyropecten catalinae</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb) 7–2.5 Ma	<i>Chlamys</i> (<i>Lyropecten</i>) <i>cerrosensis</i> Gabb	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb) 7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb) 7–2.5 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>cerrosensis</i> Gabb	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb) 7–2.5 Ma	<i>Pecten</i> (<i>Pecten</i>) <i>hemphilli</i> Dall	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb) 7–2.5 Ma	<i>Pecten ashleyi</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
7–2.5 Ma	<i>Lyropecten cerrosensis</i> (Gabb) 7–2.5 Ma	<i>Pecten cerrosensis</i> Gabb	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crasscardo</i> (Conrad) 18–8 Ma	<i>Chlamys</i> (<i>Lyropecten</i>) <i>crasscardo</i> (Conrad)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crasscardo</i> (Conrad) 18–8 Ma	<i>Lyropecten crasscardo</i> (Conrad)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crasscardo</i> (Conrad) 18–8 Ma	<i>Lyropecten crasscardo nomlandi</i> Hertlein	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crasscardo</i> (Conrad) 18–8 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>crasscardo</i> Conrad n. var.	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crasscardo</i> (Conrad) 18–8 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>crasscardo</i> Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0

18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten crassicardo</i> (Conrad)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten crassicardo</i> Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten crassicardo</i> Conrad n.var.	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten estrellanus</i> ? Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten holwayi</i> Clark	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten ricei</i> Trask	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Pecten vickeryi</i> Trask	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
18–8 to 5? Ma	<i>Lyropecten crassicardo</i> (Conrad) 18–8 Ma	<i>Swiftopecten adekunbiana</i> Adegoke	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–5 Ma	<i>Lyropecten estrellanus</i> (Conrad) 13–5 Ma	<i>Lyropecten estrellanus</i> (Conrad)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–5 Ma	<i>Lyropecten estrellanus</i> (Conrad) 13–5 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>estrellanus</i> Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–5 Ma	<i>Lyropecten estrellanus</i> (Conrad) 13–5 Ma	<i>Pecten estrellanus</i> Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–8 Ma	<i>Lyropecten gallegosi</i> (Jordan and Hertlein) 12–6.5 Ma (Smith, 1991a)	<i>Lyropecten gallegosi</i> (Jordan and Hertlein)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–8 Ma	<i>Lyropecten gallegosi</i> (Jordan and Hertlein) 12–6.5 Ma (Smith, 1991a)	<i>Pecten</i> (<i>Lyropecten</i>) <i>gallegosi</i> Jordan and Hertlein	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–17 Ma	<i>Lyropecten miguelensis</i> (Arnold) 27–17 Ma	<i>Lyropecten miguelensis</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–17 Ma	<i>Lyropecten miguelensis</i> (Arnold) 27–17 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>miguelensis</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–17 Ma	<i>Lyropecten miguelensis</i> (Arnold) 27–17 Ma	<i>Pecten miguelensis</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–8 Ma	<i>Lyropecten modulatus</i> (Hertlein) 13.5–7.2 Ma (Smith, 1991a)	<i>Lyropecten modulatus</i> (Hertlein)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma (Smith, 1991a)	<i>Lyropecten miguelensis</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Lyropecten pretiosus</i> (Hertlein)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>miguelensis submiguelensis</i> Loel and Corey	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>vaughani</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten</i> cf. <i>P. crassicardo</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten crassicardo</i> Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten estrellanus</i> Conrad	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten miguelensis</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten miguelensis submiguelensis</i> Loel and Corey	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Pecten vaughani</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten pretiosus</i> (Hertlein) 27–22 Ma	<i>Swiftopecten hamlini</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
N.D.	<i>Lyropecten</i> sp.	<i>Lyropecten</i> sp.	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
23–17 Ma	<i>Lyropecten</i> sp. aff. <i>L. conylomatus</i> (Dall) (Smith, 1991a)	“ <i>Lyropecten</i> ” sp. aff. “ <i>L.</i> ” <i>conylomatus</i> (Dall)	N.D.
23–17 Ma	<i>Lyropecten</i> sp. aff. <i>L. dumblei</i> (Gardner) 22–19.5 Ma (Smith, 1991a)	“ <i>Lyropecten</i> ” sp. aff. “ <i>L.</i> ” <i>dumblei</i> (Gardner)	N.D.
8–2.5 Ma	<i>Lyropecten terminus</i> (Arnold) 8–2.5 Ma	<i>Lyropecten terminus</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
8–2.5 Ma	<i>Lyropecten terminus</i> (Arnold) 8–2.5 Ma	<i>Pecten estrellanus</i> Conrad <i>terminus</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13–8 Ma	<i>Lyropecten tiburonensis</i> Smith 14 or 13 Ma to 11.2 or 10.2 Ma	<i>Pecten subnodosus</i> Sowerby	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten vaughni</i> (Arnold) 27–23 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>vaughni</i> Arnold	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
27–23 Ma	<i>Lyropecten vaughni</i> (Arnold) 27–23 Ma	<i>Lyropecten crasscardo vaughni</i> (Arnold)	Genus, specifically, <i>L. magnificus</i> (Sowerby), 25N in Gulf of California–0
13 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>inquinata</i> (Deshayes)	<i>Macoma inquinata</i> (Deshayes)	57N–34N; genus, intertidal to 549 m
13 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>inquinata</i> (Deshayes)	<i>Macoma inquinata</i> (Deshayes) subsp. <i>arnheimi</i> Dall	57N–34N
13 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>inquinata</i> (Deshayes)	<i>Macoma inquinata</i> Deshayes	57N–34N
27 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>nasuta</i> (Conrad)	<i>Macoma</i> (<i>Macoma</i>) <i>inquinata</i> Deshayes	56.6N–34.1N; intertidal to 50 m
27 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>nasuta</i> (Conrad)	<i>Macoma kelseyi</i> Dall	60.2N–27.7N, intertidal to 50 m, mud of bays, mud offshore
27 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>nasuta</i> (Conrad)	<i>Macoma nasuta</i> (Conrad)	60N–28N, bays, lagoons, estuaries, mud of bays
27 Ma–H	<i>Macoma</i> (<i>Heteromacoma</i>) <i>nasuta</i> (Conrad)	<i>Macoma nasuta</i> forma <i>kelseyi</i> Dall	60N–28N, abundant at mid- to high-tide levels
8 Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>brota</i> Dall	<i>Macoma nasuta kelseyi</i> Dall	60N–28N
8 Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>brota</i> Dall	<i>Macoma</i> cf. <i>edentula</i> Broderip and Sowerby	71N–48N; 10 to 260 m
23? Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>calcareea</i> (Gmelin)	<i>Macoma brota</i> Dall	71N–48N
23? Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>calcareea</i> (Gmelin)	<i>Macoma</i> cf. <i>M. tenera</i> Leach	71.4N–44.6N; 10 to 360 m
23? Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>calcareea</i> (Gmelin)	<i>Macoma calcareea</i> (Gmelin)	71N–45N
5 Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>eliminata</i> Dunnill and Coan	<i>Macoma calcareea</i> Gmelin	71N–45N
8 Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>lama</i> Bartsch	<i>Macoma</i> (<i>Macoma</i>) <i>eliminata</i> Dunnill and Coan	60N–34N
8 Ma–H	<i>Macoma</i> (<i>Macoma</i>) <i>lipara</i> Dall	<i>Macoma</i> cf. <i>M. planiuscula</i> Grant and Gale	71N–53N; intertidal to 185 m
5 Ma–H	<i>Macoma</i> (<i>Macoploma</i>) <i>medioamericana</i> Olsson	<i>Macoma brota</i> Dall var. <i>lipara</i> Dall	64.6N–33.8N; 20 to 260 m
13 Ma–H	<i>Macoma</i> (<i>Psammacoma</i>) <i>siliqua</i> Adams	<i>Macoma</i> (<i>Macoploma</i>) <i>medioamericana</i> Olsson	Gulf of California–5S; intertidal to 80 m
13 Ma–H	<i>Macoma</i> (<i>Psammacoma</i>) <i>yoldiformis</i> Carpenter	<i>Macoma</i> (<i>Psammacoma</i>) <i>siliqua</i> C.B. Adams	31N–9N; 70 to 110 m
13 Ma–H	<i>Macoma</i> (<i>Psammacoma</i>) <i>yoldiformis</i> Carpenter	<i>Macoma wilcoxi</i> Hall and Ambrose	57.1N–27.7N; intertidal to 100 m
5 Ma–H	<i>Macoma</i> (<i>Rexithaerus</i>) cf. <i>M. (R.) expansa</i> Carpenter	<i>Macoma yoldiformis</i> Carpenter	57N–28N
23–13 Ma	<i>Macoma</i> (<i>Rexithaerus</i>) <i>copelandi</i> Wiedey	<i>Macoma</i> cf. <i>M. expansa</i> Carpenter	60N–35.1N; intertidal to 30 m
23–13 Ma	<i>Macoma</i> (<i>Rexithaerus</i>) <i>copelandi</i> Wiedey	<i>Macoma</i> (<i>Rexithaerus</i>) <i>copelandi</i> Wiedey	Subgenus, 60N–25N
13 Ma–H	<i>Macoma</i> (<i>Rexithaerus</i>) <i>indentata</i> Carpenter	<i>Macoma copelandi</i> Wiedey?	Subgenus, 60N–25N
13 Ma–H	<i>Macoma</i> (<i>Rexithaerus</i>) <i>indentata</i> Carpenter	<i>Macoma</i> (<i>Rexithaerus</i>) <i>indentata tenuirostris</i> Dall	41N–28N; 12 m
13 Ma–H	<i>Macoma</i> (<i>Rexithaerus</i>) <i>indentata</i> Carpenter	<i>Macoma</i> (<i>Rexithaerus</i>) <i>indentata</i> Carpenter	41N–28N; intertidal to 100 m, bays, offshore on sandy bottoms
13 Ma–H	<i>Macoma</i> (<i>Rexithaerus</i>) <i>indentata</i> Carpenter	<i>Macoma indentata</i> (Carpenter)	41N–28N
27–13 Ma	<i>Macoma</i> (<i>Rexithaerus</i>) <i>panzana</i> (Wiedey)	<i>Macoma secta panzana</i> (Wiedey)	Subgenus, 60N–25N

27–13 Ma	<i>Macoma (Rexithaerus) panzana</i> (Wiedey)	<i>Macoma secta</i> (Conrad) <i>panzana</i> (Wiedey)	Subgenus, 60N–25N
27–13 Ma	<i>Macoma (Rexithaerus) panzana</i> (Wiedey)	<i>Macoma (Rexithaerus) secta</i> (Conrad)?	Subgenus, 60N–25N
27–13 Ma	<i>Macoma (Rexithaerus) panzana</i> Wiedey	<i>Macoma panzana</i> Wiedey	Subgenus, 60N–25N
23 Ma–H	<i>Macoma (Rexithaerus) secta</i> (Conrad)	<i>Macoma secta</i> Conrad	54N–25N; sand near bay mouths, beyond surf zone
23 Ma–H	<i>Macoma (Rexithaerus) secta</i> (Conrad)	<i>Macoma secta</i> (Conrad)	54N–25N
8–5 Ma	<i>Macoma addicotti</i> Nikas	<i>Macoma addicotti</i> Nikas	Genus, 71N–4S
5 Ma–H	<i>Macoma</i> aff. <i>M. subulosa</i> Spengler	<i>Macoma</i> (like <i>sabulosa</i> Spengler)	Genus, 71N–4S
8–2.5 Ma	<i>Macoma affinis</i> Nomland	<i>Macoma affinis</i> Nomland	Genus, 71N–4S
8–2.5 Ma	<i>Macoma affinis plena</i> Stewart	<i>Macoma affinis plena</i> Stewart	Genus, 71N–4S
17–8 Ma	<i>Macoma andersoni</i> Clark	<i>Macoma andersoni</i> Clark	Genus, 71N–4S
27–13 or 5? Ma	<i>Macoma arctata</i> (Conrad)	<i>Macoma arctata</i> (Conrad)	Genus, 71N–4S
27–13 or 5? Ma	<i>Macoma arctata</i> (Conrad)	<i>Tellina arctata</i> Conrad	Genus, 71N–4S
23? or 8 Ma–H	<i>Macoma astori</i> Dall	<i>Macoma astori</i> Dall	Genus, 71N–4S
13 Ma–H	<i>Macoma balthica</i> (Linnaeus)	<i>Macoma balthica</i> (Linnaeus)	70N–38N
23–13 Ma	<i>Macoma</i> cf. <i>M. piercei</i> Arnold	<i>Tellina (Olcesia)</i> cf. (<i>O.</i>) <i>piercei</i> (Arnold)	Genus, 71N–4S
17–5 Ma	<i>Macoma diabloensis</i> Clark	<i>Macoma diabloensis</i> Clark	Genus, 71N–4S
8 Ma–H	<i>Macoma irus</i> (Hanley)	<i>Macoma irus</i> (Hanley)	Genus, 71N–4S
8–5 Ma	<i>Macoma jacalitosana</i> Arnold	<i>Macoma jacalitosana</i> Arnold	Genus, 71N–4S
8–5 Ma	<i>Macoma kelseyi</i> Jordan and Hertlein	<i>Macoma kelseyi</i> Jordan and Hertlein	Genus, 71N–4S
13–8 Ma	<i>Macoma pabloensis</i> Clark	<i>Macoma pabloensis</i> Clark	Genus, 71N–4S
23–13 Ma	<i>Macoma piercei</i> Arnold	<i>Tellina piercei</i> (Arnold)	Genus, 71N–4S
23–13 Ma	<i>Macoma piercei</i> Arnold (see Keen and Bentson, 1944, p. 61)	<i>Macoma piercei</i> Arnold	Genus, 71N–4S
27–13 Ma	<i>Macoma sespeensis</i> Loel and Coey	<i>Macoma sespeensis</i> Loel and Coey	Genus, 71N–4S
N.D.	<i>Macoma</i> sp.	<i>Macoma</i> sp.	Genus, 71N–4S
8–5 Ma	<i>Macoma vanvlecki</i> Arnold	<i>Macoma vanvlecki</i> Arnold	Genus, 71N–4S
5 Ma–H	<i>Macrarene diegenensis</i> McLean	<i>Macrarene diegenensis</i> McLean	38N–15N
N.D.	<i>Macrocallista</i> sp.	<i>Macrocallista</i> sp.	Questionable taxonomic assignment
13 Ma–H	<i>Macrocypraea</i> cf. <i>M. cervinetta</i> Kiener (Gorves, 1997)	<i>Cypreaa</i> cf. <i>cervinetta</i> Kiener	31N–5S, through Gulf of California
17–13 Ma	<i>Macron aethiops</i> (Reeve) (Addicott, 1970a, p. 94–95)	<i>Macron aethiops</i> (Reeve)	Genus, 25N, rare in Gulf of California; common on outer coast
23–13 Ma	<i>Macron merriami</i> Arnold (1907a, p. 529)	<i>Macron merriami</i> Arnold	Genus, 25N, rare in Gulf of California
N.D.	<i>Macron</i> sp.	<i>Macron</i> sp.	Genus, 25N, rare in Gulf of California
17–13 Ma	<i>Macra beali</i> Hall and Ambrose	<i>Macra beali</i> Hall and Ambrose	Genus, 37N–1S; intertidal to 22 m, in sand
27–13 or 5? Ma	<i>Macra sectoris</i> Anderson and Martin	<i>Macra sectoris</i> Anderson and Martin	Genus, 37N–1S
N.D.	<i>Macra</i> sp.	<i>Macra</i> sp.	Questionable taxonomic assignment
13–8 Ma	<i>Macra trampasensis</i> Packard	<i>Macra trampasensis</i> Packard	Genus, 37N–1S
17–13 Ma	<i>Macra? montereyana</i> Arnold	<i>Macra montereyana</i> Arnold	Genus, 37N–1S
27–13 Ma	<i>Mactromeris abbotti</i> (Wiedey)	<i>Spisula abbotti</i> Wiedey	Genus, 71N–4S, through Gulf of California; intertidal to 95 m
13–8 Ma	<i>Mactromeris abscissa</i> (Gabb)	<i>Spisula abscissa</i> Gabb	Genus, 71N–4S
27 Ma–H	<i>Mactromeris</i> aff. <i>M. catilliformis</i> (Conrad)	<i>Spisula</i> aff. <i>catilliformis</i> Conrad	37.9N–27.8N; 5 to 20 m, sloughs and sheltered areas of outer coast
27 Ma–H	<i>Mactromeris</i> aff. <i>M. catilliformis</i> (Conrad)	<i>Spisula (Spisula)</i> aff. <i>S. (S.) catilliformis</i> Conrad	38N–28N
27–2.5 Ma	<i>Mactromeris albaria</i> (Conrad)	<i>Macra albaria</i> (Conrad)	Genus, 71N–4S
27–2.5 Ma	<i>Mactromeris albaria</i> (Conrad)	<i>Macra albaria</i> Conrad	Genus, 71N–4S
27–2.5 Ma	<i>Mactromeris albaria</i> (Conrad)	<i>Spisula (Mactromeris) albaria</i> (Conrad)	Genus, 71N–4S
27–2.5 Ma	<i>Mactromeris albaria</i> (Conrad)	<i>Spisula albaria</i> (Conrad)	Genus, 71N–4S
27–2.5 Ma	<i>Mactromeris albaria</i> (Conrad)	<i>Spisula albaria</i> Conrad	Genus, 71N–4S
27–2.5 Ma	<i>Mactromeris albaria</i> (Conrad)	<i>Spisula albaria coosensis</i> Howe	Genus, 71N–4S
17+ to 13 Ma	<i>Mactromeris albaria</i> cf. <i>M. ramonensis</i> Packard	<i>Spisula albaria</i> cf. <i>ramonensis</i> Packard	Genus, 71N–4S
8–2.5 Ma	<i>Mactromeris brevirostrata</i> (Packard)	<i>Spisula (Hemimactra) brevirostrata</i> Packard	Genus, 71N–4S
8–2.5 Ma	<i>Mactromeris brevirostrata</i> (Packard)	<i>Spisula brevirostrata</i> Packard	Genus, 71N–4S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27 Ma–H	<i>Mactromeris catilliformis</i> (Conrad)	<i>Spisula</i> (<i>Hemimactra</i>) <i>catilliformis</i> Conrad	37.9N–27.8N; 5 to 20 m, sloughs and sheltered areas of outer coast
27 Ma–H	<i>Mactromeris catilliformis</i> (Conrad)	<i>Spisula</i> (<i>Mactromeris</i>) <i>catilliformis</i> Conrad	38N–28N
27 Ma–H	<i>Mactromeris catilliformis</i> (Conrad)	<i>Spisula</i> (<i>Mactromeris</i>) <i>mercedensis</i> Packard	38N–28N
27 Ma–H	<i>Mactromeris catilliformis</i> (Conrad)	<i>Spisula</i> (<i>Spisula</i>) <i>catilliformis</i> Conrad	38N–28N
27 Ma–H	<i>Mactromeris catilliformis</i> (Conrad)	<i>Spisula catilliformis</i> (Pack)	38N–28N
27 Ma–H	<i>Mactromeris catilliformis</i> (Conrad)	<i>Spisula mercedensis</i> Packard	38N–28N
8–2.5 Ma	<i>Mactromeris coalingensis</i> (Arnold)	<i>Mactra coalingensis</i> Arnold	Genus, 71N–4S
8–2.5 Ma	<i>Mactromeris coalingensis</i> (Arnold)	<i>Spisula coalingensis</i> Arnold	Genus, 71N–4S
27? or 13 Ma–H	<i>Mactromeris hemphilli</i> (Dall)	<i>Spisula</i> (<i>Mactromeris</i>) <i>hemphillii</i> Dall	35.5N–26.2N; intertidal to 95 m, common offshore
27? or 13 Ma–H	<i>Mactromeris hemphilli</i> (Dall)	<i>Spisula</i> (<i>Hemimactra</i>) <i>hemphilli</i> (Dall)	36N–26N
27? or 13 Ma–H	<i>Mactromeris hemphilli</i> (Dall)	<i>Spisula hemphilli</i> (Dall)	36N–26N
27? or 13 Ma–H	<i>Mactromeris hemphilli</i> (Dall)	<i>Spisula</i> (<i>Spisula</i>) <i>hemphilli</i> (Dall)	36N–26N
27? or 13 Ma–H	<i>Mactromeris hemphilli</i> (Dall)	<i>Mactra</i> (<i>Spisula</i>) <i>hemphilli</i> Dall (or <i>catilliformis</i> Conrad?)	36N–26N
8–5 Ma	<i>Mactromeris mossbeachensis</i> Glen	<i>Spisula</i> (<i>Hemimactra</i>) <i>mossbeachensis</i> Glen	Genus, 71N–4S
8–5 Ma	<i>Mactromeris mossbeachensis</i> Glen	<i>Spisula mossbeachensis</i> Glen	Genus, 71N–4S
8 Ma–H	<i>Mactromeris polynyma</i> (Stimpson)	<i>Spisula</i> (<i>Hemimactra</i>) <i>voyi</i> (Gabb)	70.8N–46N
8 Ma–H	<i>Mactromeris polynyma</i> (Stimpson)	<i>Spisula voyi</i> Gabb	71N–46N
8 Ma–H	<i>Mactromeris polynyma</i> (Stimpson)	<i>Spisula voyi</i> (Gabb)	71N–46N
17–8 Ma	<i>Mactromeris selbyensis</i> Packard	<i>Spisula selbyensis</i> Packard	Genus, 71N–4S
17–8 Ma	<i>Mactromeris selbyensis</i> Packard	<i>Spisula albaria selbyensis</i> Packard	Genus, 71N–4S
17–13 Ma	<i>Mactromeris</i> sp. cf. <i>M. rushi</i> (Wagner and Schilling)	<i>Spisula</i> sp. cf. <i>S. rushi</i> Wagner and Schilling	Genus, 71N–4S
5 Ma–H	<i>Mactrotoma</i> (<i>Micromactra</i>) <i>californica</i> (Conrad)	<i>Mactra californica</i> Conrad	36.6N–8.9N, Gulf of California; sandflats, bays, intertidal to 15 m
13? or 5–2.5 Ma	<i>Maeundra bowersi</i> (Vaughan)	<i>Maeundra bowersi</i> (Vaughan)	“Reef-corals,” present-day genus living in Caribbean
13 Ma–H	<i>Malea ringens</i> (Swainson)	<i>Malea ringens</i> (Swainson)	31N, Gulf of California–5S; rock at extreme tides and sand bars
13 Ma–H	<i>Malea ringens</i> (Swainson)	<i>Malela ringens</i> Swainson	31N, Gulf of California–5S
5 Ma–H	<i>Mangelia</i> aff. <i>M. variegata</i> Carpenter	<i>Mangelia</i> aff. <i>M. variegata</i> Carpenter	Alaska or 37N–24N
5 Ma–H	<i>Mangelia barbarensis</i> Oldroyd	<i>Mangelia barbarensis</i> Oldroyd	34N–23N, Gulf of California
8 Ma–H	<i>Mangelia interlirata</i> Stearns	<i>Mangelia interlirata</i> Stearns	37N–33N
5–2.5 Ma	<i>Mangelia intermedia</i> (Arnold)	“Mitromorpha” <i>intermedia</i> Arnold	Genus, 72N–1S
5–2.5 Ma	<i>Mangelia painei</i> Arnold	<i>Mangelia painei</i> Arnold	Genus, 72N–1S
N.D.	<i>Mangelia</i> sp.	<i>Mangelia</i> sp.	Genus, 72N–1S
5 Ma–H	<i>Mangelia variegata</i> Carpenter	<i>Mangelia variegata</i> Carpenter	Alaska or 37N–24N
5 Ma–H	<i>Mangelia variegata</i> Carpenter	<i>Clathromangelia variegata</i> (Carpenter)	Alaska or 37N–24N
8 Ma–H	<i>Margarites</i> (<i>Lirularia</i>) <i>condoni</i> Dall	<i>Margarita condoni</i> Dall	72N–29N
8 Ma–H	<i>Margarites</i> (<i>Lirularia</i>) <i>condoni</i> Dall	<i>Margarites</i> (<i>Lirularia</i>) <i>condoni</i> Dall	72N–29N
5–2.5 Ma	<i>Margarites</i> (<i>Pupillaria</i>) <i>arestus</i> (Berry)	<i>Pupillaria aresta</i> (Berry)	72N–29N; intertidal to 229 m
5 Ma–H	<i>Margarites</i> (<i>Pupillaria</i>) cf. <i>M. (P.) optabilis</i> (Carpenter)	<i>Pupillaria</i> cf. <i>P. optabilis</i> (Carpenter)	34N–32N
8 Ma–H	<i>Margarites</i> (<i>Pupillaria</i>) <i>pupillus</i> (Gould)	<i>Margarita pupilla</i> Gould	60N–32N, deep water
8 Ma–H	<i>Margarites</i> (<i>Pupillaria</i>) <i>pupillus</i> (Gould)	<i>Pupillaria pupilla</i> (Gould)	60N–32N, deep water
8 Ma–H	<i>Margarites</i> (<i>Pupillaria</i>) <i>pupillus</i> (Gould)	<i>Margarites pupillus</i> (Gould)	60N–32N, deep water
8–5 Ma	<i>Margarites johnsoni</i> (Arnold)	<i>Margarita johnsoni</i> Arnold	Genus, 72N–29N

8–5 Ma	<i>Margarites johnsoni</i> (Arnold)	<i>Margarites johnsoni</i> (Arnold)	Genus, 72N–29N
N.D.	<i>Margarites</i> sp.	<i>Margarites</i> sp.	Genus, 72N–29N
N.D.	<i>Marginella</i> sp.	<i>Marginella</i> sp.	Genus, 37N–1S; intertidal to 230 m, on rocks
27–13 Ma	<i>Mediargo</i> cf. <i>M. mathewsoni</i> (Gabb)	<i>Mediargo</i> ? cf. <i>M. mathewsoni</i> (Gabb)	Genus not living
23–13 Ma	<i>Mediargo dilleri</i> (Anderson and Martin)	<i>Argobuccinum dilleri</i> Anderson and Martin	Genus not living
23–13 Ma	<i>Mediargo dilleri</i> (Anderson and Martin)	<i>Argobuccinum</i> n.sp.	Genus not living
23–13 Ma	<i>Mediargo dilleri</i> (Anderson and Martin)	<i>Gyrineum dilleri</i> (Anderson and Martin)	Genus not living
23–13 Ma	<i>Mediargo dilleri</i> (Anderson and Martin)	<i>Mediargo dilleri</i> (Anderson and Martin)	Genus not living
27–13 Ma	<i>Mediargo mathewsoni</i> (Gabb)	<i>Mediargo mathewsoni</i> (Gabb)	Genus not living
13–8 Ma	<i>Mediargo trampasensis</i> (Clark)	<i>Bursa carinata</i> Clark	Genus not living
13–8 Ma	<i>Mediargo trampasensis</i> (Clark)	<i>Bursa trampasensis</i> Clark	Genus not living
8 Ma–H	<i>Megabalanus californicus</i> (Pilsbry) (Arthropoda)	<i>Megabalanus</i> (<i>Megabalanus</i>) <i>californicus</i> (Pilsbry) (Arthropoda)	37N–24N
8–5 Ma	<i>Megabalanus californicus</i> (Pilsbry) (Newman and Ross, 1976)	<i>Balanus tintinnabulum</i> cf. <i>B. californicus</i> (no author given)	37N–24N
8–5 Ma	<i>Megabalanus coccopoma</i> (Darwin) (Newman and Ross, 1976)	<i>Balanus tintinnabulum</i> (Linnaeus) <i>cocopoma</i> (no author given)	23N–8N
8–5 Ma	<i>Megapetalus</i> cf. <i>M. lovenoides</i> Clark (Echinodermata)	<i>Megapetalus</i> cf. <i>M. leniodes</i> Clark (Echinodermata)	Genus not living, Miocene–Pliocene
8–5 Ma	<i>Megapetalus</i> cf. <i>M. lovenoides</i> Clark	<i>Megapetalus</i> sp.	Genus not living, Miocene–Pliocene
5–2.5 Ma	<i>Megapetalus holmani</i> (Grant and Hertlein)	<i>Palaeopneustes holmani</i> Grant and Hertlein	Genus not living, Miocene–Pliocene
8–5 Ma	<i>Megapetalus lovenoides</i> Clark	<i>Megapetalus lovenoides</i> Clark	Genus not living, Miocene–Pliocene
23? or 13 Ma–H	<i>Megapitaria</i> aff. <i>M. squalida</i> (Sowerby)	<i>Macrocallista</i> (<i>Megapitaria</i>) aff. <i>M. (M.) squalida</i> (Sowerby)	31N–4S; sandy mudflats to 120 m
23? or 13 Ma–H	<i>Megapitaria</i> aff. <i>M. squalida</i> (Sowerby)	<i>Macrocallista</i> cf. <i>M. maculata</i> (Linnaeus)	31N–4S
5–2.5 Ma	<i>Megapitaria densa</i> (Moody)	<i>Macrocallista densa</i> Moody	Genus, 31N–4S; sandy mudflats to 120 m
5–2.5 Ma	<i>Megapitaria densa</i> (Moody)	<i>Megapitaria densa</i> (Moody)	Genus, 31N–4S
N.D.	<i>Megapitaria</i> sp.	<i>Macrocallista</i> sp.?	Genus, 31N–4S
23? or 13 Ma–H	<i>Megapitaria squalida</i> (Sowerby)	<i>Megapitaria squalida</i> Sowerby	31N–4S
23? or 13 Ma–H	<i>Megapitaria squalida</i> (Sowerby)	<i>Megapitaria squalida</i> (Sowerby)	31N–4S
8–5 Ma	<i>Megasurcula</i> aff. <i>M. cooperi</i> (Arnold)	<i>Megasurcula</i> aff. <i>M. cooperi</i> (Arnold)	Genus, 38N–28N; 18 to 370 m
13? or 8 Ma–H	<i>Megasurcula carpenteriana</i> (Gabb)	<i>Megasurcula carpenteriana</i> (Gabb)	38N–28N, 27 to 100 m, common on sandy bottoms
13? or 8 Ma–H	<i>Megasurcula carpenteriana</i> (Gabb)	<i>Turris</i> (<i>Bathytoma</i>) <i>carpenteriana</i> (Gabb)	38N–28N
8–2.5 Ma	<i>Megasurcula carpenteriana</i> (Gabb) <i>femandoana</i> (Arnold)	<i>Bathytoma carpenteriana femandoana</i> Arnold	Species, 38N–28N
8–2.5 Ma	<i>Megasurcula carpenteriana</i> (Gabb) <i>fernandoana</i> (Arnold)	<i>Megasurcula carpenteriana</i> (Gabb) <i>fernandoana</i> (Arnold)	Species, 38N–28N
8–2.5 Ma	<i>Megasurcula</i> cf. <i>M. carpenteriana</i> (Gabb)	<i>Surculites</i> (<i>Megasurcula</i>) cf. <i>carpenterianus</i> (Gabb)	38N–28N
8–5 Ma	<i>Megasurcula</i> cf. <i>M. cooperi</i> (Arnold)	<i>Megasurcula</i> cf. <i>M. cooperi</i> (Arnold)	Genus, 38N–28N, common on offshore sandy bottoms
23–13 Ma	<i>Megasurcula</i> cf. <i>M. keepi</i> (Arnold)	<i>Pseudotoma</i> cf. <i>P. keepi</i> (Arnold)	Genus, 38N–28N
27–17 Ma	<i>Megasurcula condonana</i> (Anderson and Martin)	<i>Megasurcula condonana</i> (Anderson and Martin)	Genus, 38N–28N
23–13 Ma	<i>Megasurcula howei</i> Hanna and Hertlein	<i>Megasurcula howei</i> Hanna and Hertlein	Genus, 38N–28N
23–13 Ma	<i>Megasurcula howei</i> Hanna and Hertlein	<i>Turris</i> n.sp. of Loel and Corey (1932)	Genus, 38N–28N
23–13 Ma	<i>Megasurcula howei</i> Hanna and Hertlein	<i>Turris</i> n.sp. (large)?	Genus, 38N–28N
23–13 Ma	<i>Megasurcula keepi</i> (Arnold)	<i>Bathytoma keepi</i> Arnold	Genus, 38N–28N
23–13 Ma	<i>Megasurcula keepi</i> (Arnold)	<i>Megasurcula keepi</i> (Arnold)	Genus, 38N–28N
23–13 Ma	<i>Megasurcula keepi</i> (Arnold)	<i>Pleurotoma</i> (<i>Bathytoma</i>) <i>keepi</i> Arnold	Genus, 38N–28N
23–13 Ma	<i>Megasurcula keepi</i> (Arnold)	<i>Pleurotoma</i> (<i>Dolichotoma</i>) <i>keepi</i> Arnold	Genus, 38N–28N
23–13 Ma	<i>Megasurcula keepi</i> (Arnold)	<i>Surcula</i> (<i>Bathytoma</i>) <i>keepi</i> (Arnold)	Genus, 38N–28N
23–13 Ma	<i>Megasurcula keepi</i> (Arnold)	<i>Turris keepi</i> (Arnold)?	Genus, 38N–28N
N.D.	<i>Megasurcula</i> n.sp.?	<i>Turris</i> n.sp. (large)	Genus, 38N–28N
13–8 Ma	<i>Megasurcula sinuata</i> (Gabb)	<i>Surculites sinuatus</i> (Gabb)	Genus, 38N–28N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
N.D.	<i>Megasurcula</i> sp.	<i>Megasurcula</i> sp.	Genus, 38N–28N
N.D.	<i>Megasurcula</i> sp.	<i>Pseudostoma</i> sp.	Genus, 38N–28N
13–2.5 Ma	<i>Megasurcula steamsiana</i> (Raymond)	<i>Megasurcula remondii</i> (Gabb)	Genus, 38N–28N
13–2.5 Ma	<i>Megasurcula steamsiana</i> (Raymond)	<i>Surculites (Megasurcula) remondii</i> (Gabb)	Genus, 38N–28N
13–2.5 Ma	<i>Megasurcula steamsiana</i> (Raymond)	<i>Surculites remondi</i> (Gabb)	Genus, 38N–28N
8 Ma–H	<i>Megasurcula tryoniana</i> (Gabb)	<i>Megasurcula tryoniana</i> (Gabb)	34N–32N
8 Ma–H	<i>Megasurcula tryoniana</i> (Gabb)	<i>Turris (Bathytoma) tryoniana</i> (Gabb)	34N–32N
8 Ma–H	<i>Megasurcula tryoniana</i> (Gabb)	<i>Megathura crenulata</i> (Sowerby)?	37N–24N
8 Ma–H	<i>Megasurcula tryoniana</i> (Gabb) (synonym of <i>M. carpenteriana</i> [McLean, 1978])	<i>Megasurcula carpenteriana tryoniana</i> (Gabb)	34N–32N, 15 to 64 m, sandy bottoms
23–13 or 5? Ma	<i>Megasurcula wynoocheensis</i> (Weaver)	<i>Megasurcula wynoocheensis</i> (Weaver)	Genus, 38N–28N
5 Ma–H	<i>Megathura crenulata</i> (Sowerby)	<i>Megathura crenulata</i> (Sowerby)	37N–24N
N.D.	<i>Megathura</i> sp. (or <i>Terebra</i> sp.)	<i>Megathura</i> sp.	<i>Megathura</i> , 37N–28N
5 Ma–H	<i>Melampus (Melampus)</i> cf. <i>M. (M.) olivaceus</i> Carpenter	<i>Melampus</i> cf. <i>M. olivaceus</i> Carpenter	34N–23N, through Gulf of California; above high-tide line in bays
27–8 Ma	<i>Melongena californica</i> Anderson and Martin	<i>Melongena californica</i> Anderson and Martin	Genus, northern Gulf of California–8N; sand and mudflats
23–17 Ma	<i>Melongena sanjuanensis</i> Anderson and Martin	<i>Melongena sanjuanensis</i> Anderson and Martin	Genus, northern Gulf of California–8N
27–23 Ma	<i>Mercenaria? virginiana</i> (Loel and Corey)	<i>Venus virginiana</i> Loel and Corey	Genus, 28N in Gulf of California and Atlantic Ocean
5–2.5 Ma	<i>Merriamaster arnoldi</i> (Twitchell) (Echinodermata)	<i>Dendraster (Merriamaster) arnoldi</i> Twitchell (Echinodermata)	Genus not living
5–2.5 Ma	<i>Merriamaster arnoldi</i> (Twitchell)	<i>Merriamaster arnoldi</i> (Twitchell)	Genus not living
8–2.5 Ma	<i>Merriamaster</i> cf. <i>M. israelskyi</i> (Jordan and Hertlein)	<i>Merriamaster</i> cf. <i>M. israelskyi</i> Jordan and Hertlein	Genus not living
8–2.5 Ma	<i>Merriamaster israelskyi</i> (Jordan and Hertlein)	<i>Astrodapsis israelskyi</i> Jordan and Hertlein	Genus not living
5–2.5 Ma	<i>Merriamaster pacificus</i> (Kew)	<i>Merriamaster pacificus</i> Kew	Genus not living
	<i>Merriamaster perrini</i> (Weaver)	<i>Dendraster (Merriamaster) perrini</i> (Weaver)	Genus not living
5–2.5 Ma	<i>Merriamaster perrini</i> (Weaver)	<i>Merriamaster perrini</i> (Weaver)	Genus not living
13 Ma–H	<i>Metalia spatagus?</i> (Linnaeus)	<i>Metalia spatagus?</i> Linnaeus	24N–8N
5 Ma–H	<i>Micranellum crebricinctum</i> (Carpenter)	<i>Micranellum crebricinctum</i> (Carpenter)	55N–28N; intertidal to 73 m
5 Ma–H	<i>Microglyphis breviculus</i> (Dall)	<i>Microglyphis breviculus</i> (Dall)	37N–30N; genus, 65 to 1820 m
5 Ma–H	<i>Milneria</i> cf. <i>M. kelseyi</i> Dall	<i>Milneria</i> cf. <i>M. kelseyi</i> Dall	37N–27.1N; intertidal to 40 m, nestling under rocks
5 Ma–H	<i>Milneria minima</i> Dall	<i>Milneria minima</i> Dall	50.8N–29N; intertidal to 30 m, nestling under rocks
27–13 or 8? Ma	<i>Miltha (Miltha) sanctaecrucis</i> (Arnold)	<i>Miltha (Miltha) sanctaecrucis</i> (Arnold)	Genus, 26N–25N; 55 m or deeper
27–13 or 8? Ma	<i>Miltha (Miltha) sanctaecrucis</i> (Arnold)	<i>Miltha sanctaecrucis</i> (Arnold)	Genus, 26N–25N
27–13 or 8? Ma	<i>Miltha (Miltha) sanctaecrucis</i> (Arnold)	<i>Phacoides (Miltha) sanctaecrucis</i> Arnold	Genus, 26N–25N
27–13 or 8? Ma	<i>Miltha (Miltha) sanctaecrucis</i> (Arnold)	<i>Phacoides santaecrucis</i> Arnold	Genus, 26N–25N
N.D.	<i>Miltha (Miltha)</i> sp.	<i>Miltha</i> sp.	Genus, 26N–25N
13 Ma–H	<i>Miltha (Miltha) xantusi</i> (Dall)	<i>Lucina (Miltha) xantusi</i> Dall	26N–25N; 55 m or deeper
13 Ma–H	<i>Miltha (Miltha) xantusi</i> (Dall)	<i>Miltha xantusi</i> Dall	26N–25N
13 Ma–H	<i>Miltha (Miltha) xantusi</i> (Dall)	<i>Phacoides xantusi</i> Dall	26N–25N
8–5 Ma	<i>Miltha (Miltha?) jacalitosana</i> (Arnold)	<i>Paphia jacalitosensis</i> Arnold	Genus, 26N–25N
N.D.	<i>Miltha</i> sp.	<i>Miltha</i> sp.	Genus, 26N–25N
5 Ma–H	<i>Miodontiscus prolongatus</i> Carpenter	<i>Miodontiscus prolongatus</i> Carpenter	60.8N–32.7N; 5 to 210 m
13? or 5–2.5 Ma	<i>Mirachelus imperialis</i> Schremp	<i>Mirachelus imperialis</i> Schremp	Genus, 10N–0; 91 to 183 m
17–13 Ma	<i>Mitra (Atrimitra) andersoni</i> Addicott	<i>Mitra (Atrimitra) andersoni</i> Addicott	Subgenus, 25N–3S, Gulf of California; 5 to 73 m

5 Ma–H	<i>Mitra (Atrimitra) idea</i> Melvill	<i>Mitra (Atrimitra) idea</i> Melvill	39N–28N
8 Ma–H	<i>Mitra idae</i> Melvill	<i>Mitra idae</i> Melvill	39N–33N
13 Ma–H	<i>Mitra orientalis</i> Griffith and Pidgeon	<i>Mitra sulcata</i> Swainson	42N–south of equator
23–13 Ma	<i>Mitrella (Columbellopsis) alta</i> Addicott	<i>Mitrella (Columbellopsis) alta</i> Addicott	Genus, 70N–5N; subgenus Mediterranean
23–13 Ma	<i>Mitrella (Columbellopsis) alta</i> Addicott	<i>Mitrella (Columbellopsis) n.sp.</i>	Genus, 70N–5N; subgenus Mediterranean
27–13 Ma	<i>Mitrella (Columbellopsis) richthofeni</i> (Gabb)	<i>Mitrella (Columbellopsis) richthofeni</i> (Gabb)	Genus, 70N–5N; subgenus, Mediterranean
17–13 Ma	<i>Mitrella anchuela</i> Keen	<i>Mitrella anchuela</i> Keen	Genus, 70N–5N; intertidal to 549 m, chiefly sublittoral
13? or 5 Ma–H	<i>Mitrella carinata</i> (Hinds)	<i>Mitrella carinata</i> (Hinds)	38N–23N, littoral to 64 m, among rocks and eelgrass
8 Ma–H	<i>Mitrella gouldii</i> (Carpenter)	<i>Columbella (Astryis) constantia</i> Moody	55N–24N
8 Ma–H	<i>Mitrella gouldii</i> (Carpenter)	<i>Mitrella gouldii</i> (Carpenter)	55N–24N
13–8 Ma	<i>Mitrella pittsburgensis</i> (Clark)	<i>Columbella (Astryis) pittsburgensis</i> Clark	Genus, 70N–5N
8–2.5 Ma	<i>Mitrella richthofeni</i> (Gabb)	<i>Astryis richthofeni</i> Gabb	Genus, 70N–5N
8–2.5 Ma	<i>Mitrella richthofeni</i> (Gabb)	<i>Columbella (Astryis) richthofeni</i> (no author given)	Genus, 70N–5N
8–2.5 Ma	<i>Mitrella richthofeni</i> (Gabb)	<i>Mitrella richthofeni</i> (Gabb)	Genus, 70N–5N
N.D.	<i>Mitrella sp.</i>	<i>Mitrella sp.</i>	Genus, 70N–5N; subgenus Mediterranean
N.D.	<i>Mitrella sp.</i>	<i>Columbella sp.</i>	Genus, 70N–5N
5 Ma–H	<i>Mitrella sp. a</i> (Davis, 1998)	<i>Mitrella sp. A</i> (Davis, 1998)	Genus, 70N–5N
5 Ma–H	<i>Mitrella sp. b</i> (Davis, 1998)	<i>Mitrella sp. B</i> (Davis, 1998)	Genus, 70N–5N
N.D.	<i>Mitrella sp.?</i>	<i>Astryis n.sp.</i>	Genus, 70N–5N
23 Ma–H	<i>Mitrella tuberosa</i> (Carpenter)	<i>Mitrella tuberosa</i> Carpenter	55N–23N
23 Ma–H	<i>Mitrella tuberosa</i> (Carpenter)	<i>Mitrella tuberosa</i> (Carpenter)	55N–23N
13 Ma–H	<i>Modiolus (Modiolus) capax</i> (Conrad)	<i>Volsella capax</i> (Conrad)	36.6N–5.1S; at low tide; shallow sublittoral, protected areas
13 Ma–H	<i>Modiolus (Modiolus) capax</i> (Conrad)	<i>Modiolus capax</i> Conrad	37N–5S, intertidal to 200 m, common in bays on pillings
13 Ma–H	<i>Modiolus (Modiolus) capax</i> (Conrad)	<i>Modiolus (Modiolus) capax</i> (Conrad)	37N–5S
8 Ma–H	<i>Modiolus (Modiolus) cf. M. (M.) modiolus</i> (Linnaeus)	<i>Modiolus (Modiolus) cf. M. (M.) modiolus</i> (Linnaeus)	57.8N–36.6N; intertidal to 200 m
8 Ma–H	<i>Modiolus (Modiolus) cf. M. (M.) modiolus</i> (Linnaeus)	<i>Volsella cf. V. modiolus</i> (Linnaeus)	58N–37N in Pacific; 70N?–35N in western Atlantic
27–23 Ma	<i>Modiolus (Modiolus) lagunanus</i> Loel and Corey	<i>Modiolus (Modiolus) lagunanus</i> Loel and Corey	Genus, 73N–5S; intertidal to 73 m, attached to rocks or in sand
27–23 Ma	<i>Modiolus (Modiolus) lagunanus</i> Loel and Corey	<i>Modiolus ynezianus lagunanus</i> Loel and Corey	Genus, 73N–5S
27–23 Ma	<i>Modiolus (Modiolus) lagunanus</i> Loel and Corey	<i>Modiolus ynezianus</i> (Arnold) <i>lagunanus</i> Loel and Corey	Genus, 73N–5S
17–13 Ma	<i>Modiolus (Modiolus) veronensis temblorensis</i> Adegoke	<i>Modiolus (Modiolus) veronensis temblorensis</i> Adegoke	Genus, 73N–5S
17–13 Ma	<i>Modiolus (Modiolus) veronensis temblorensis</i> Adegoke	<i>Modiolus veronensis temblorensis</i> Adegoke	Genus, 73N–5S
13–8 Ma	<i>Modiolus (Modiolus) veronensis</i> Trask	<i>Brachiodontes veronensis</i> (Trask)	Genus, 73N–5S
13–8 Ma	<i>Modiolus (Modiolus) veronensis</i> Trask	<i>Modiolus (Modiolus) veronensis</i> Trask	Genus, 73N–5S
13–8 Ma	<i>Modiolus (Modiolus) veronensis</i> Trask	<i>Modiolus veronensis</i> Trask	Genus, 73N–5S
13–8 Ma	<i>Modiolus (Modiolus) veronensis</i> Trask	<i>Nuculana veronensis</i> (Trask)	Genus, 73N–5S
27–23 Ma	<i>Modiolus (Modiolus) ynezianus</i> Arnold	<i>Modiolus (Modiolus) ynezianus</i> Arnold	Genus, 73N–5S
27–23 Ma	<i>Modiolus (Modiolus) ynezianus</i> Arnold	<i>Modiolus ynezianus</i> Arnold	Genus, 73N–5S
17–13 Ma	<i>Modiolus (Modiolus) ynezianus garzaensis</i> Adegoke	<i>Modiolus (Modiolus) ynezianus garzaensis</i> Adegoke	Genus, 73N–5S
17–13 Ma	<i>Modiolus (Modiolus) ynezianus garzaensis</i> Adegoke	<i>Modiolus ynezianus garzaensis</i> Adegoke	Genus, 73N–5S
23 Ma–H	<i>Modiolus (Modiolusia) flabellatus</i> (Gould)	<i>Modiolus (Modiolus) flabellatus</i> (Gould)	54N–30N
23 Ma–H	<i>Modiolus (Modiolusia) flabellatus</i> (Gould)	<i>Modiolus directus</i> (Dall)	54N–30N
23 Ma–H	<i>Modiolus (Modiolusia) flabellatus</i> (Gould)	<i>Modiolus directus</i> Dall	54N–30N
13 Ma–H	<i>Modiolus (Modiolusia) flabellatus</i> (Gould)	<i>Modiolus flabellatus</i> (Gould)	54N–30N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13 Ma–H	<i>Modiolus (Modiolusia) flabellatus</i> (Gould)	<i>Volsella recta</i> (Conrad) var. <i>flabellata</i> (Gould)	54N–30N
13 Ma–H	<i>Modiolus (Modiolusia) flabellatus</i> (Gould)	<i>Volsella recta flabellata</i> (Gould)	54N–30N
13 Ma–H	<i>Modiolus (Modiolusia) rectus</i> (Conrad)	<i>Modiolus (Modiolus) rectus</i> (Conrad)	54.1–5.1S; mudflats, intertidal to 15 m
13 Ma–H	<i>Modiolus (Modiolusia) rectus</i> (Conrad)	<i>Modiolus rectus</i> (Conrad)	54N–5S
13 Ma–H	<i>Modiolus (Modiolusia) rectus</i> (Conrad)	<i>Modiolus rectus</i> Conrad	54N–5S
13 Ma–H	<i>Modiolus (Modiolusia) rectus</i> (Conrad)	<i>Volsella recta</i> (Conrad)	54N–5S
5 Ma–H	<i>Modiolus (Modiolusia?) sacculifer</i> Berry	<i>Modiolus (Modiolus?) sacculifer</i> Berry	34N–33N; 35 to 50 m
5 Ma–H	<i>Modiolus (Modiolusia?) sacculifer</i> Berry	<i>Modiolus sacculifer</i> Berry	34N–33N
N.D.	<i>Modiolus</i> sp.	<i>Volsella</i> sp.	Genus, 73N–5S
N.D.	<i>Modiolus</i> sp.	<i>Modiolus</i> sp.	Genus, 73N–5S
13–8 Ma	<i>Modiolus unidens</i> Lister	<i>Modiolus unidens</i> Lister	Genus, 73N–5S
13–8 Ma	<i>Modiolus? (Modiolus?) clarki</i> Moore	<i>Mytilus merriami</i> Clark	Genus, 73N–5S
13–8 Ma	<i>Modulus modulus</i> Linnaeus	<i>Modulus modulus</i> Linnaeus	Genus, Gulf of California–3S; 35N–15N, Atlantic; mudflats
N.D.	<i>Modulus? n.sp.</i>	<i>Modulus? n.sp.</i>	Genus, Gulf of California–3S; 35N–15N, Atlantic; rocky shores
27–13 Ma	<i>Molopophorus anglonanus</i> (Anderson)	<i>Bullia (Molopophorus) anglonana</i> Anderson	Genus not living
27–13 Ma	<i>Molopophorus anglonanus</i> (Anderson)	<i>Cuma biplicata</i> Gabb	Genus not living
27–13 Ma	<i>Molopophorus anglonanus</i> (Anderson)	<i>Molopophorus anglonana</i> (Anderson)	Genus not living
27–13 Ma	<i>Molopophorus anglonanus</i> (Anderson)	<i>Molopophorus anglonanus</i> (Anderson)	Genus not living
23–17 Ma	<i>Molopophorus matthewi</i> Etherington	<i>Molopophorus matthewi</i> Etherington	Genus not living
N.D.	<i>Molopophorus</i> sp.	<i>Molopophorus</i> sp.	Genus not living
17–13 Ma	<i>Morula (Morunella) granti</i> Addicott	<i>Morula (Morunella) granti</i> Addicott	Subgenus, 25N–3N, through Gulf of California
N.D.	<i>Murex</i> sp.	<i>Murex</i> sp.	Questionable taxonomic assignment
N.D.	<i>Murex</i> sp.	<i>Murex</i> sp.	Genus, 28N–3S, throughout Gulf of California; to depths of 75 m
5–2.5 Ma	<i>Musashia (Nipponomelon) oregonensis</i> (Dall)	<i>Musashia (Nipponomelon) oregonensis</i> (Dall)	N.D.
5 Ma–H	<i>Musculus niger</i> (Gray)	<i>Musculus (Musculus) stalderi</i> (Martin)	71N–46.6N; intertidal to 150 m
5 Ma–H	<i>Musculus niger</i> (Gray)	<i>Modiolus stalderi</i> Martin	71N–47N
13 Ma–H	<i>Mya (Arenomya) arenaria</i> Linnaeus	<i>Mya arenaria</i> Linnaeus	70.3N–32.7N; intertidal, mudflats, lagoons, back bays, and estuaries
13 Ma–H	<i>Mya (Arenomya) arenaria</i> Linnaeus	<i>Mya (Arenomya) arenaria</i> Linnaeus	70N–33N
17–13 Ma	<i>Mya (Arenomya) fujiei</i> MacNeil	<i>Mya (Arenomya) fujiei</i> MacNeil	Genus, 71N–33N; intertidal to 37 m, sandy mud, black mud, bays
8–5 Ma	<i>Mya (Arenomya) macneili</i> Adegoke	<i>Mya (Arenomya) macneili</i> Adegoke	Genus, 71N–33N
13–8 or 2.5? Ma	<i>Mya dickersoni</i> Clark	<i>Mya dickersoni</i> Clark	Genus, 71N–33N
8 Ma–H	<i>Mya japonica</i> Jay (probably <i>M. arenaria</i> Linnaeus)	<i>Mya japonica</i> Jay	71N–37N
N.D.	<i>Mya</i> sp.	<i>Mya</i> sp.	Genus, 71N–33N
8 Ma–H	<i>Mya truncata</i> Linnaeus	<i>Mya truncata</i> Linnaeus	71.4N–48.4N; intertidal to 100 m
17–13 Ma	<i>Myadesma pacifica</i> Hall and Ambrose	<i>Myadesma pacifica</i> Hall and Ambrose	Genus not living
17–13 Ma	<i>Mytella</i> cf. <i>M. inezensis</i> (Conrad)	<i>Volsella</i> cf. <i>V. inezana</i> (Conrad)	Genus, 29N–4S; intertidal to 5 m, mudflats
8–2.5 Ma	<i>Mytilus (Crenomytilus) coalingensis</i> Arnold	<i>Crenomytilus coalingensis</i> (Arnold)	Subgenus, Japan and Philippines; genus, 72N–19N intertidal, rocks
8–2.5 Ma	<i>Mytilus (Crenomytilus) coalingensis</i> Arnold	<i>Mytilus (Crenomytilus) coalingensis</i> (Arnold)	Subgenus, Japan and Philippines; genus, 72N–19N
8–2.5 Ma	<i>Mytilus (Crenomytilus) coalingensis</i> Arnold	<i>Mytilus (Mytiloconcha) coalingensis</i> Arnold	Subgenus, Japan and Philippines; genus, 72N–19N

8–2.5 Ma	<i>Mytilus (Crenomytilus) coalingensis</i> Arnold	<i>Mytilus coalingensis</i> (Arnold)	Subgenus, Japan and Philippines; genus, 72N–19N
8–2.5 Ma	<i>Mytilus (Crenomytilus) coalingensis</i> Arnold	<i>Mytilus coalingensis</i> Arnold	Subgenus, Japan and Philippines; genus, 72N–19N
27–13 or 2.5? Ma	<i>Mytilus (Crenomytilus) expansus</i> Arnold	<i>Mytilus mathewsoni</i> Gabb <i>expansus</i> Arnold	Subgenus, Japan and Philippines; genus, 72N–19N
27–13 or 2.5? Ma	<i>Mytilus (Crenomytilus) expansus</i> Arnold	<i>Crenomytilus expansus</i> Arnold	Subgenus, Japan and Philippines; genus, 72N–19N
27–13 or 2.5? Ma	<i>Mytilus (Crenomytilus) expansus</i> Arnold	<i>Mytilus expansus</i> Arnold	Subgenus, Japan and Philippines; genus, 72N–19N
13–5 Ma	<i>Mytilus (Crenomytilus) kewi</i> Nomland	<i>Mytilus kewi</i> Nomland	Subgenus, Japan and Philippines; genus, 72N–19N
27–13 Ma	<i>Mytilus (Crenomytilus) mathewsonii</i> Gabb	<i>Mytilus mathewsonii</i> Gabb	Subgenus, Japan and Philippines; genus, 72N–19N
5–2.5 Ma	<i>Mytilus (Crenomytilus) sternbergi</i> Hertlein and Grant	<i>Mytilus (Crenomytilus) coalingensis sternbergi</i> Hertlein	Subgenus, Japan and Philippines; genus, 72N–19N
13–8 Ma	<i>Mytilus (Crenomytilus) trampasensis</i> Clark	<i>Mytilus (Mytiloncha) trampasensis</i> Clark	Subgenus, Japan and Philippines; genus, 72N–19N
17–8 Ma	<i>Mytilus (Crenomytilus?) perrini</i> Clark	<i>Mytilus perrini</i> Clark	Subgenus, Japan and Philippines; genus, 72N–19N
17–8 Ma	<i>Mytilus (Crenomytilus?) schencki</i> Hanna and Hertlein	<i>Mytilus schencki</i> Hanna and Hertlein	Subgenus, Japan and Philippines; genus, 72N–19N
5 Ma–H	<i>Mytilus (Mytilus) californianus</i> Conrad	<i>Mytilus californianus</i> Conrad	59.2N–18.8N; upper intertidal, attached to rocks by byssus, to 50 m
27–8 Ma	<i>Mytilus (Mytilus?)</i> cf. <i>M. (M.?) loeli</i> Grant	<i>Mytilus</i> cf. <i>M. kewi</i> Nomland	Subgenus, Japan and Philippines; genus, 72N–19N
27–8 Ma	<i>Mytilus (Mytilus?) loeli</i> Grant	<i>Mytilus hamlini</i> Loel and Corey	Genus, 72N–19N
27–8 Ma	<i>Mytilus (Mytilus?) loeli</i> Grant	<i>Mytilus loeli</i> Grant	Genus, 72N–19N
23–13 Ma	<i>Mytilus (Plicatomytilus) cf. M. (P.) middendorffi</i> Grewingk	<i>Mytilus cf. M. middendorffi</i> Grewingk	Genus, 72N–19N
23–13 Ma	<i>Mytilus (Plicatomytilus) middendorffi</i> Grewingk	<i>Mytilus middendorffi</i> Grewingk	Genus, 72N–19N
8–5 Ma	<i>Mytilus highoochiaie</i> Mandra	<i>Mytilus highoochiaie</i> Mandra	Genus, 72N–19N
N.D.	<i>Mytilus</i> sp.	<i>Mytilus</i> sp.	Genus, 72N–19N
17 Ma–H	<i>Mytilus trossulus</i> Gould	<i>Mytilus edulis</i> Linnaeus	Genus, 72N–33.5N
17 Ma–H	<i>Mytilus trossulus</i> Gould (Coan et al., 2000, p. 159)	<i>Mytilus (Mytilus) edulis</i> Linnaeus	72N–33.5N; intertidal on rocks
8–1.6 Ma	<i>Nanochlamys nutteri</i> (Arnold) 8–1.6 Ma	<i>Swiftopecten nutteri</i> (Arnold)	Genus not living
8–1.6 Ma	<i>Nanochlamys nutteri</i> (Arnold) 8–1.6 Ma	<i>Chlamys nutteri</i> Arnold	Genus not living
8–1.6 Ma	<i>Nanochlamys nutteri</i> (Arnold) 8–1.6 Ma	<i>Pecten nutteri</i> Arnold	Genus not living
8–1.6 Ma	<i>Nanochlamys nutteri</i> (Arnold) 8–1.6 Ma	<i>Pecten (Pallium) swiftii bernardi</i> var. <i>nutteri</i> Arnold (?)	Genus not living
8–1.6 Ma	<i>Nanochlamys nutteri</i> (Arnold) 8–1.6 Ma	<i>Pecten (Pallium) swiftii bernardi nutteri</i> Arnold	Genus not living
23–17 Ma	<i>Nassarius (Catilon?) antiselli</i> (Anderson and Martin)	<i>Nassa antiselli</i> Anderson and Martin	Subgenus, 39N–5N
23–17 Ma	<i>Nassarius (Catilon?) antiselli</i> (Anderson and Martin)	<i>Nassarius antiselli</i> (Anderson and Martin)	Subgenus, 39N–5N
17–13 Ma	<i>Nassarius (Arcularia) harrellensis</i> Addicott	<i>Nassarius (Phrontis) harrellensis</i> Addicott	Subgenus, 24N–3S, through Gulf of California
23–13 Ma	<i>Nassarius (Arcularia) ocoyanus</i> (Anderson and Martin)	<i>Nassa blakei</i> Anderson and Martin	Subgenus, 24N–3S, through Gulf of California
23–13 Ma	<i>Nassarius (Arcularia) ocoyanus</i> (Anderson and Martin)	<i>Nassa ocoyana</i> Anderson and Martin	Subgenus, 24N–3S, through Gulf of California
23–13 Ma	<i>Nassarius (Arcularia) ocoyanus</i> (Anderson and Martin)	<i>Nassarius (Phrontis) ocoyanus</i> (Anderson and Martin)	Subgenus, 24N–3S, through Gulf of California
23–13 Ma	<i>Nassarius (Arcularia) ocoyanus</i> (Anderson and Martin)	<i>Nassarius blakei</i> (Anderson and Martin)	Subgenus, 24N–3S, through Gulf of California

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23–13 Ma	<i>Nassarius (Arcularia) ocoyanus</i> (Anderson and Martin)	<i>Nassarius ocoyana</i> (Anderson and Martin)	Subgenus, 24N–3S, through Gulf of California
23–13 Ma	<i>Nassarius (Arcularia) ocoyanus</i> (Anderson and Martin)	<i>Nassarius ocoyanus</i> (Anderson and Martin)	Subgenus, 24N–3S, through Gulf of California
17–13 Ma	<i>Nassarius (Arcularia) posoensis</i> Addicott	<i>Nassarius (Phrontis?) posoensis</i> Addicott	Subgenus, 24N–3S, through Gulf of California
17–13 Ma	<i>Nassarius (Arcularia) smooti</i> Addicott	<i>Nassarius (Phrontis) smooti</i> Addicott	Subgenus, 24N–3S, through Gulf of California
8 Ma–H	<i>Nassarius (Caesia) aff. N. (C.) perpinguis</i> (Hinds)	<i>Nassa aff. N. perpinguis</i> Hinds	48N–28N; intertidal, in lagoons, and offshore in shallow water
8 Ma–H	<i>Nassarius (Caesia) cf. N. (C.) perpinguis</i> (Hinds)	<i>Nassarius cf. N. perpinguis</i> (Hinds)	48N–28N
8–5 Ma	<i>Nassarius (Caesia) coalingensis</i> (Arnold)	<i>Nassarius (Caesia) coalingensis</i> (Arnold)	Subgenus, 49N–23N, through Gulf of California
8–5 Ma	<i>Nassarius (Caesia) coalingensis</i> (Arnold)	<i>Schizopyga californiana coalingensis</i> (Arnold)	Subgenus, 49–23N, through Gulf of California
5 Ma–H	<i>Nassarius (Caesia) fossatus</i> (Gould)	<i>Nassa fossata</i> Gould	49N–27N; bays, lagoons, sandy substrate, offshore to 7 m
5 Ma–H	<i>Nassarius (Caesia) fossatus</i> (Gould)	<i>Nassarius (Schizopyga) fossatus</i> Gould	49N–27N
8–2.5 Ma	<i>Nassarius (Caesia) grammatus</i> (Dall)	<i>Nassarius (Demonidia) grammatus</i> (Dall)	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) grammatus</i> (Dall)	<i>Nassarius grammatus</i> (Dall)	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) grammatus</i> (Dall)	<i>Nassarius (Caesia) grammatus</i> (Dall)	Subgenus, 49N–23N, through Gulf of California
8–5 Ma	<i>Nassarius (Caesia) grammatus addicotti</i> Adegoke	<i>Nassarius (Caesia) grammatus</i> (Dall) <i>addicotti</i> Adegoke	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moranianus</i> (Martin)	<i>“Nassa” moriana</i> Martin	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moranianus</i> (Martin)	<i>Nassa moriana</i> Martin	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moranianus</i> (Martin)	<i>Nassa moriana</i> Martin	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moranianus</i> (Martin)	<i>Nassarius (Caesia) moranianus</i> (Martin)	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moranianus</i> (Martin)	<i>Nassarius (Schizopyga) moranianus</i> (Martin)	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moranianus</i> (Martin)	<i>Nassarius moranianus</i> (Martin)	Subgenus, 49N–23N, through Gulf of California
8–2.5 Ma	<i>Nassarius (Caesia) moriana</i> (Martin)	<i>Schizopyga moriana</i> (Martin)	Subgenus, 49N–23N, through Gulf of California
17–5 Ma	<i>Nassarius (Caesia) whitneyi</i> (Trask)	<i>Nassa whitneyi</i> Trask	Subgenus, 49N–23N, through Gulf of California
17–5 Ma	<i>Nassarius (Caesia) whitneyi</i> (Trask)	<i>Nassarius whitneyi</i> (Trask)	Subgenus, 49N–23N, through Gulf of California
5 Ma–H	<i>Nassarius (Catilon) insculptus</i> (Carpenter)	<i>Nassarius insculptus</i> (Carpenter)	39N–28N
27–13 or 8? Ma	<i>Nassarius (Catilon) arnoldi</i> (Anderson)	<i>Nassarius churchi</i> (Hertlein)	Subgenus, 39N–5S
27–13 or 8? Ma	<i>Nassarius (Catilon) arnoldi</i> (Anderson)	<i>Uzita? arnoldi</i> (Anderson)	Subgenus, 39N–5S
27–13 or 8? Ma	<i>Nassarius (Catilon) arnoldi</i> (Anderson)	<i>Nassa arnoldi</i> Anderson	Subgenus, 39N–5S
27–13 or 8? Ma	<i>Nassarius (Catilon) arnoldi</i> (Anderson)	<i>Nassarius arnoldi</i> (Anderson)	Subgenus, 39N–5S
27–13 or 8? Ma	<i>Nassarius (Catilon) arnoldi</i> (Anderson)	<i>Nassarius churchi</i> (Hertlein)	Subgenus, 39N–5S
13? or 8–5 Ma	<i>Nassarius (Catilon) cf. N. (C.) stocki</i> Kanakoff	<i>Nassarius cf. N. stocki</i> Kanakoff	Subgenus, 39N–5S
27–23 Ma	<i>Nassarius (Catilon) churchi</i> (Hertlein)	<i>Alectrion churchi</i> Hertlein	Subgenus, 39N–5S
8–2.5 Ma	<i>Nassarius (Catilon) hamlini</i> (Arnold)	<i>Nassarius (? Uzita) hamlini</i> (Arnold)	Subgenus, 39N–5S
8–2.5 Ma	<i>Nassarius (Catilon) hamlini</i> (Arnold)	<i>Nassa hamlini</i> Arnold	Subgenus, 39N–5S
8–2.5 Ma	<i>Nassarius (Catilon) hamlini</i> (Arnold)	<i>Nassarius hamlini</i> (Arnold)	Subgenus, 39N–5S
5–2.5 Ma	<i>Nassarius (Catilon) hildegardae</i> Kanakoff	<i>Nassarius hildegardae</i> Kanakoff	Subgenus, 39N–5S
8–5 Ma	<i>Nassarius (Catilon) iniquus</i> (Stewart)	<i>Nassarius iniquus</i> (Stewart)	Subgenus, 39N–5S
8–5 Ma	<i>Nassarius (Catilon) iniquus</i> (Stewart)	<i>Nassa miser iniqua</i> Stewart	Subgenus, 39N–5S
13–8 Ma	<i>Nassarius (Catilon) pabloensis</i> (Clark)	<i>Nassarius pabloensis</i> (Clark)	Subgenus, 39N–5S
13–8 Ma	<i>Nassarius (Catilon) pabloensis</i> (Clark)	<i>Nassa pabloensis</i> Clark	Subgenus, 39N–5S
13? or 8–5 Ma	<i>Nassarius (Catilon) stocki</i> Kanakoff	<i>Nassarius stocki</i> Kanakoff	Subgenus, 39N–5S
27–13 Ma	<i>Nassarius (Catilon?) antiselli</i> (Anderson and Martin)	<i>Nassarius antiselli</i> (Anderson and Martin)	Subgenus, 39N–5S
27–13 Ma	<i>Nassarius (Catilon?) antiselli</i> (Anderson and Martin)	<i>Nassa antiselli</i> Anderson and Martin	Subgenus, 39N–5S

8–5 Ma	<i>Nassarius (Catilon?) salinasensis</i> Addicott	<i>Nassarius salinasensis</i> Addicott	Subgenus, 39N–5S
8–2.5 Ma	<i>Nassarius (Demondia) californianus</i> (Conrad)	“ <i>Nassa</i> ” <i>waldorfensis</i> Arnold	Subgenus, 55N–25N
8–2.5 Ma	<i>Nassarius (Demondia) californianus</i> (Conrad)	<i>Nassarius californianus</i> (Conrad)	Subgenus, 55N–25N
8–2.5 Ma	<i>Nassarius (Demondia) californianus</i> (Conrad)	<i>Nassa californiana</i> Conrad	Subgenus, 55N–25N
8–2.5 Ma	<i>Nassarius (Demondia) californianus</i> (Conrad)	<i>Nassa californica</i> (Conrad)	Subgenus, 55N–25N
8–2.5 Ma	<i>Nassarius (Demondia) californianus</i> (Conrad)	<i>Nassa californica</i> Conrad	Subgenus, 55N–25N
17? or 5 Ma–H	<i>Nassarius (Demondia) cooperi</i> (Forbes)	<i>Nassarius (Demondia) californianus</i> (Conrad)	Subgenus, 55N–25N
17? or 5 Ma–H	<i>Nassarius (Demondia) cooperi</i> (Forbes)	<i>Nassa cooperi</i> (Forbes)	48N–33N
17? or 5 Ma–H	<i>Nassarius (Demondia) cooperi</i> (Forbes)	<i>Nassa cooperi</i> (Forbes)	48N–33N
17? or 5 Ma–H	<i>Nassarius (Demondia) cooperi</i> (Forbes)	“ <i>Nassa</i> ” <i>mendica</i> Gould <i>cooperi</i> Forbes	48N–23N
		<i>Nassarius (Schizopyga) mendicus</i> (Gould)	48N–33N
		<i>cooperi</i> (Forbes)	
13 Ma–H	<i>Nassarius (Demondia) mendicus</i> (Gould)	“ <i>Nassa</i> ” <i>mendica</i> Gould	55N–25N; bays, intertidal to sublittoral
13 Ma–H	<i>Nassarius (Demondia) mendicus</i> (Gould)	<i>Nassa mendica</i> Gould	55N–25N
13 Ma–H	<i>Nassarius (Demondia) mendicus</i> (Gould)	<i>Nassarius (Schizopyga) mendicus</i> (Gould)	55N–25N
13 Ma–H	<i>Nassarius (Demondia) mendicus</i> (Gould)	<i>Nassarius mendicus</i> (Gould)	55N–25N
13 Ma–H	<i>Nassarius (Demondia) mendicus</i> (Gould)	<i>Nassarius mendicus</i> forma <i>indisputabilis</i> (Oldroyd)	55N–25N
5 Ma–H	<i>Nassarius (Deomondia) forma indisputabilis</i> (Oldroyd)	<i>Nassarius (Deomondia) forma indisputabilis</i> (Oldroyd)	48N–34N
N.D.	<i>Nassarius</i> sp.	“ <i>Nassa</i> ” sp.	Genus, 55N–5S; intertidal to 370 m, on mud and sand
N.D.	<i>Nassarius</i> sp.	<i>Alectrion</i> sp.	Genus, 55N–5S; sheltered coves and estuaries
N.D.	<i>Nassarius</i> sp.	<i>Nassa</i> sp.	Genus, 55N–5S
N.D.	<i>Nassarius</i> sp.	<i>Nassarius</i> sp.	Genus, 55N–5S
8 Ma–H	<i>Natica (Cryptonatica) clausa</i> Broderip and Sowerby	<i>Cryptonatica clausa</i> (Broderip and Sowerby)	72N–54N
8 Ma–H	<i>Natica (Cryptonatica) clausa</i> Broderip and Sowerby	<i>Natica (Tectonatica) clausa</i> Broderip and Sowerby	72N–54N
8 Ma–H	<i>Natica (Cryptonatica) clausa</i> Broderip and Sowerby	<i>Natica clausa</i> Broderip and Sowerby	72N–54N
8 Ma–H	<i>Natica (Cryptonatica) clausa</i> Broderip and Sowerby	<i>Natica clausa</i> Broderip and Sowerby	72N–54N
8 Ma–H	<i>Natica (Cryptonatica) clausa</i> Broderip and Sowerby	<i>Natica consors</i> Dall	72N–54N
23–17 Ma	<i>Natica (Cryptonatica) oregonensis</i> Conrad	<i>Cryptonatica oregonensis</i> (Conrad)	Genus, 72N–23N; intertidal to 1647 m, living on soft substrate
8 Ma–H	<i>Natica (Cryptonatica) russa</i> Gould	<i>Natica (Tectonatica) russa</i> Gould	71N–33N
8 Ma–H	<i>Natica (Cryptonatica) russa</i> Gould	<i>Cryptonatica aleutica</i> Dall	71N–33N
8 Ma–H	<i>Natica (Cryptonatica) russa</i> Gould	<i>Natica russa</i> Gould	71N–33N
17–13 Ma	<i>Natica (Natica) teglandae</i> Hanna and Hertlein	<i>Natica (Natica) teglandae</i> Hanna and Hertlein	Subgenus, 24N–3S
13 Ma–H	<i>Natica (Natica) unifasciata</i> Lamarck	<i>Natica unifasciata</i> Lamarck	10N–5S
23–17 Ma	<i>Natica (Natica) vokesi</i> Addicott	<i>Natica vokesi</i> Addicott	Subgenus, 24N–3S
17–13 Ma	<i>Natica (Naticarius?) posuncula</i> Hanna and Hertlein	<i>Natica (Naticarius?) posuncula</i> Hanna and Hertlein	Genus, 71N–5S; subgenus, Florida and West Indies
17–13 Ma	<i>Natica (Naticarius?) posuncula</i> Hanna and Hertlein	<i>Natica posuncula</i> Hanna and Hertlein	Genus, 71N–5S; subgenus, Florida and West Indies
23–17 Ma	<i>Natica inezana</i> Conrad	<i>Natica inezana</i> Conrad?	Genus, 71N–5S
N.D.	<i>Natica</i> sp.	<i>Natica</i> sp.	Genus, 71N–5S
13–8 Ma	<i>Nematurella pittsburgensis</i> (Clark)	<i>Littorina pittsburgensis</i> Clark	Genus not living
23–17 Ma	<i>Nemocardium (Arctopratalum?)</i> cf. <i>N. (A.) griphus</i> Keen	<i>Nemocardium (Arctopratalum?)</i> cf. <i>N. (A.) griphus</i> Keen	Genus, 58N–28N; 18 to 137 m
17 Ma–H	<i>Nemocardium (Keenaea) centifilosum</i> (Carpenter)	<i>Pratalum centifilosum</i> (Carpenter)	58.7N–27.7N; 30 to 150 m
17 Ma–H	<i>Nemocardium (Keenaea) centifilosum</i> (Carpenter)	<i>Laevicardium centifilosum</i> (Carpenter)	59N–28N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
17 Ma–H	<i>Nemocardium</i> (<i>Keenaea</i>) <i>centifilosum</i> (Carpenter)	<i>Nemocardium centrifilosum</i> (Carpenter)	59N–28N
17 Ma–H	<i>Nemocardium</i> (<i>Keenaea</i>) <i>centifilosum</i> (Carpenter)	<i>Pratulium</i> ? cf. <i>P. centrifilosum</i> (Carpenter)	59N–28N
5 Ma–H	<i>Neolepton</i> (<i>Stohleria</i>) cf. <i>N. (S.) salmonea</i> (Carpenter)	<i>Holodarka</i> cf. <i>H. salmonea</i> (Carpenter)	53.5N–25N; 20 to 60 m, also reported from intertidal to 92 m
5 Ma–H	<i>Neolepton</i> (<i>Stohleria</i>) cf. <i>N. (S.) salmonea</i> (Carpenter)	<i>Psephidia</i> cf. <i>P. salmonea</i> (Carpenter)	54N–25N
5–2.5 Ma	<i>Neptunea</i> (<i>Neptunea</i>) <i>altispira</i> (Gabb)	<i>Chrysodomus altispira</i> Gabb	Genus, 72N–33N
5–2.5 Ma	<i>Neptunea</i> (<i>Neptunea</i>) <i>altispira</i> (Gabb)	<i>Neptunea altispira</i> Gabb	Genus, 72N–33N
5–2.5 Ma	<i>Neptunea</i> (<i>Neptunea</i>) <i>altispira</i> (Gabb)	<i>Neptunea</i> (<i>Neptunea</i>) <i>lirata</i> (Martyn) subsp. <i>altispira</i> Gabb	Genus, 72N–33N
5–2.5 Ma	<i>Neptunea</i> (<i>Neptunea</i>) <i>andersoni</i> (Martin)	<i>Chrysodomus andersoni</i> Martin	Genus, 72N–33N
5–2.5 Ma	<i>Neptunea</i> (<i>Neptunea</i>) <i>andersoni</i> (Martin)	<i>Neptunea</i> (<i>Neptunea</i>) <i>andersoni</i> (Martin)	Genus, 72N–33N
8 Ma–H	<i>Neptunea</i> (<i>Neptunea</i>) <i>lirata</i> (Martyn)	<i>Chrysodomus liratus</i> Martyn	71N–37N
8 Ma–H	<i>Neptunea</i> (<i>Neptunea</i>) <i>lirata</i> (Martyn)	<i>Neptunea lyrata</i> (Gmelin)	71N–37N
8 Ma–H	<i>Neptunea</i> (<i>Neptunea</i>) <i>pribiloffensis</i> (Dall)	<i>Neptunea</i> (<i>Neptunea</i>) <i>pribiloffensis</i> (Dall)	56N–54N
23–17 Ma	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>eatoni</i> Grant and Quayle	<i>Neptunea eatoni</i> Grant and Quayle	Genus, 72N–33N
5–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>scotiaensis</i> (Martin)	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>scotiaensis</i> (Martin)	Genus, 72N–33N
8 Ma–H	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird)	<i>Chrysodomus tabulatus</i> Baird	51N–33N, 84 to 436 m
8 Ma–H	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird)	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird)	51N–33N
8–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird) <i>colmaensis</i> (Martin)	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird) subsp. <i>colmaensis</i> (Martin)	Species, 51N–33N, 84 to 436 m
8–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird) <i>colmaensis</i> (Martin)	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird) var. <i>colmaensis</i> (Martin)	Species, 51N–33N
8–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird) <i>colmaensis</i> (Martin)	<i>Neptunea colmaensis</i> Martin	Species, 51N–33N
8–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i>) <i>tabulata</i> (Baird) <i>colmaensis</i> (Martin)	<i>Neptunea tabulata colmaensis</i> (Martin)	Species, 51N–33N
8–5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i> ?) <i>lawsoni</i> (Martin)	<i>Chrysodomus lawsoni</i> Martin	Genus, 72N–33N; intertidal to 1555 m
5–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i> ?) <i>lawsoni</i> (Martin)	<i>Neptunea</i> (<i>Sulcosipho</i> ?) <i>lawsoni</i> (Martin)	Genus, 72N–33N
5–2.5 Ma	<i>Neptunea</i> (<i>Sulcosipho</i> ?) <i>stocki</i> (Howe)	<i>Neptunea</i> (<i>Sulcosipho</i> ?) <i>stocki</i> (Howe)	Genus, 72N–33N
17–8 Ma	<i>Neptunea buwaldi</i> (Clark)	<i>Neptunea buwaldi</i> (Clark)	Genus, 72N–33N
17–8 Ma	<i>Neptunea buwaldi</i> (Clark)	<i>Chrysodomus buwaldi</i> Clark	Genus, 72N–33N
8–5 Ma	<i>Neptunea</i> cf. <i>N. diabloensis</i> (Clark)	<i>Chrysodomus</i> cf. <i>C. diabloensis</i> Clark	Genus, 72N–33N
5 Ma–H	<i>Neptunea</i> cf. <i>N. smirnia</i> (Dall)	<i>Neptunea</i> cf. <i>N. smirnia</i> (Dall)	60N–48N
13–8 Ma	<i>Neptunea cierboensis</i> (Clark)	<i>Chrysodomus cierboensis</i> Clark	Genus, 72N–33N
13–8 Ma	<i>Neptunea cierboensis</i> (Clark)	<i>Neptunea cierboensis</i> (Clark)	Genus, 72N–33N
13–8 Ma	<i>Neptunea cierboensis</i> (Clark)	<i>Thais cierboensis</i> Clark	Genus, 72N–33N
13–8 Ma	<i>Neptunea diabloensis</i> (Clark)	<i>Chrysodomus diabloensis</i> Clark	Genus, 72N–33N
13–8 Ma	<i>Neptunea pabloensis</i> (Clark)	<i>Chrysodomus pabloensis</i> Clark	Genus, 72N–33N
13–8 Ma	<i>Neptunea pabloensis</i> (Clark)	<i>Neptunea pabloensis</i> (Clark)	Genus, 72–33N
8–5 Ma	<i>Neptunea praenominata</i> (Hanna)	<i>Tritonalia praenominata</i> (Hanna)	Genus, 72N–33N
8–5 Ma	<i>Neptunea purisimaensis</i> (Martin)	<i>Neptunea purisimaensis</i> (Martin)	Genus, 72N–33N
N.D.	<i>Neptunea</i> sp.	<i>Neptunea</i> sp.	Genus, 72N–33N
13–8 Ma	<i>Neptunea</i> ? <i>rodeoensis</i> (Clark)	<i>Clava rodeoensis</i> (Clark)	Genus, 72N–33N
13 Ma–H	<i>Nerita</i> (<i>Ritena</i>) <i>scabricostata</i> Lamarck	<i>Nerita scabricostata</i> Lamarck	28N–3S, through Gulf of California; wave splash zone at high tide
13 Ma–H	<i>Nerita</i> (<i>Theliostyla</i>) <i>funiculata</i> Menke	<i>Nerita</i> cf. <i>bernhardi</i> Recluz	28N–5S, through Gulf of California; intertidal, on rocks

17–13 Ma 27–23 Ma	<i>Nerita</i> (<i>Theliostyla</i> ?) <i>joaquinensis</i> Addicott <i>Nerita beali</i> ? Loel and Corey	<i>Nerita</i> (<i>Theliostyla</i> ?) <i>joaquinensis</i> Addicott <i>Nerita beali</i> ? Loel and Corey	Subgenus, 28N–5S, through the Gulf of California Genus, 28N–5S, through Gulf of California; intertidal, on rocks
N.D. 8 Ma–H	<i>Nerita</i> sp. <i>Netastoma rotrata</i> (Valenciennes)(see McLean, 1978, p. 92)	<i>Nerita</i> sp. <i>Netastomella rotrata</i> (Valenciennes)	Genus, 28N–5S, through Gulf of California 50N–27N; intertidal to 46 m, boring into rocks
23–13 Ma 17–13 Ma N.D. 8–5 Ma	<i>Niso antiselli</i> Anderson and Martin <i>Niso cottonwoodensis</i> Addicott <i>Niso</i> n.sp. Powell <i>Nodipecten arthriticus</i> (Reeve) 8–5 Ma	<i>Niso antiselli</i> Anderson and Martin <i>Niso cottonwoodensis</i> Addicott <i>Niso</i> n.sp. Powell <i>Nodipecten arthriticus</i> (Reeve)	Genus, 33N–3S; 9 to 200 m Genus, 33N–3S Genus, 33N–3S Genus, 32N–5S; washed onto beaches but living in deeper water
8 Ma–H	<i>Nodipecten subnodosus subnodosus</i> (Sowerby) 8 Ma to Holocene	<i>Pecten</i> (<i>Lyropecten</i>) <i>subnodosus</i> Sowerby	32.4N–24.2; intertidal to 110
13–2.5 Ma 13–2.5 Ma 8 Ma–H	<i>Nodipecten veatchii</i> (Gabb) 13–2.5 Ma <i>Nodipecten veatchii</i> (Gabb) 13–2.5 Ma <i>Norrisia norrisi</i> (Sowerby)	<i>Pecten veatchii</i> Gabb <i>Pecten</i> (<i>Lyropecten</i>) <i>veatchii</i> Gabb <i>Norrisia norrisi</i> (Sowerby)?	Genus, 32N–5S Genus, 32N–5S 37N–28N; intertidal, on rocks and algae; offshore on kelp
8 Ma–H	<i>Norrisia norrisi</i> (Sowerby)	<i>Norrisia</i> ? sp	37N–28N; intertidal, on rocks and algae; offshore on kelp
23–13 or 8 Ma	<i>Notocytharella</i> cf. <i>N. kernensis</i> (Anderson and Martin) 13–8 Ma	<i>Mangelia</i> cf. <i>M. kernensis</i> Anderson and Martin	Genus, 27N in Gulf of California–3S; low tide to 10 m
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Clathrodrillia</i> (<i>Moniliopsis</i>) <i>kernensis</i> (Anderson and Martin)	Genus, 27N in Gulf of California–3S; low tide to 10 m
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Clathrodrillia kernensis</i> (Anderson and Martin)	Genus, 27N in Gulf of California–3S
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Drillia kernensis</i> Anderson	Genus, 27N in Gulf of California–3S
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Mangelia</i> (<i>Cacodaphnella</i> ?) <i>kernensis</i> (Anderson and Martin)	Genus, 27N in Gulf of California–3S
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Mangelia</i> (<i>Notocytharella</i>) <i>kernensis</i> (Anderson and Martin)	Genus, 27N in Gulf of California–3S
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Mangelia kernensis</i> (Anderson and Martin)	Genus, 27N in Gulf of California–3S
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Mangelia kernensis</i> Anderson and Martin	Genus, 27N in Gulf of California–3S
23–13 or 8 Ma	<i>Notocytharella kernensis</i> (Anderson and Martin) 23–13 Ma	<i>Pseudotomella kernensis</i> (Anderson and Martin)	Genus, 27N in Gulf of California–3S
N.D. 17–13 Ma 13 Ma–H 13 Ma–H 13 Ma–H 8–2.5 Ma	<i>Notocytharella</i> sp. <i>Notocytharella</i> ? <i>hartensis</i> (Addicott) <i>Nucella canaliculata</i> (Duclos) <i>Nucella canaliculata</i> (Duclos) <i>Nucella canaliculata</i> (Duclos) <i>Nucella</i> cf. <i>N. lamellosa shumanensis</i> (Carson)	<i>Mangelia</i> sp. <i>Mangelia</i> (<i>Notocytharella</i> ?) <i>hartensis</i> Addicott <i>Thais canaliculata</i> Duclos <i>Thais</i> (<i>Nucella</i>) <i>canaliculata</i> (Duclos) <i>Purpura canaliculata</i> Duclos <i>Thais</i> (<i>Nucella</i>) cf. <i>T. shumanensis</i> Carson	Genus, 27N in Gulf of California–3S Genus, 27N in Gulf of California–3S 57N–37N; intertidal, among barnacles and mussels 57N–37N 57N–37N Species, 65N–34N; intertidal, among barnacles and mussels
13 Ma–H 8–2.5 Ma	<i>Nucella</i> cf. <i>N. lima</i> (Marytn) <i>Nucella elsmerensis</i> (Grant and Gale)	<i>Thais</i> (<i>Nucella</i>) cf. <i>T. (N.) lima</i> (Gmelin) <i>Nucella elsmerensis</i> (Grant and Gale)	66N–28N; intertidal, among barnacles and mussels Genus, 66N–3S; intertidal, among barnacles and mussels
8–2.5 Ma 5 Ma–H 5 Ma–H 8–5 or 2.5? Ma	<i>Nucella elsmerensis</i> (Grant and Gale) <i>Nucella emarginata</i> (Deshayes) <i>Nucella emarginata</i> (Deshayes) <i>Nucella etchegoinensis</i> (Arnold)	<i>Thais elsmerensis</i> Grant and Gale <i>Thais emarginata</i> (Deshayes) <i>Nucella emarginata</i> (Deshayes) <i>Thais etchegoinensis</i> Arnold	Genus, 66N–3S 58N–16N; in rock crevices near mussle beds 58N–16N Genus, 66N–3S; intertidal, among barnacles and mussels

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
8–5 or 2.5? Ma	<i>Nucella etchegoinensis</i> (Arnold)	<i>Nucella etchegoinensis</i> (Arnold)	Genus, 66N–3S
8–5 or 2.5? Ma	<i>Nucella etchegoinensis</i> (Arnold)	<i>Polytropa etchegoinensis</i> (Arnold)	Genus, 66N–3S
8–5 or 2.5? Ma	<i>Nucella etchegoinensis</i> (Arnold)	<i>Thais</i> (<i>Nucella</i>) <i>etchegoinensis</i> (Arnold)	Genus, 66N–3S
8–5 Ma	<i>Nucella funkeana</i> (Adegoke)	<i>Polytropa funkeana</i> Adegoke	Genus, 66N–3S
13 Ma–H	<i>Nucella lamellosa</i> (Gmelin)	<i>Nucella lamellosa</i> (Gmelin)	65N–34N, intertidal, bays, estuaries, rocky shores, low wave action
13 Ma–H	<i>Nucella lamellosa</i> (Gmelin)	<i>Polytropa lamellosa</i> (Gmelin)	65N–34N
13 Ma–H	<i>Nucella lamellosa</i> (Gmelin)	<i>Thais</i> (<i>Nucella</i>) <i>lamellosa</i> (Gmelin)	65N–34N
13 Ma–H	<i>Nucella lamellosa</i> (Gmelin)	<i>Thais lamellosa</i> (Gmelin)	65N–34N
13 Ma–H	<i>Nucella lamellosa</i> (Gmelin)	<i>Thais lamellosa</i> Gmelin	65N–34N
8–2.5 Ma	<i>Nucella lamellosa collomi</i> (Carson)	<i>Nucella lamellosa collomi</i> (Carson)	Species, 65N–34N, intertidal, bays, estuaries, rocky shores
8–2.5 Ma	<i>Nucella lamellosa collomi</i> (Carson)	<i>Nucella collomi</i> (Carson)	Species, 65N–34N
8–2.5 Ma	<i>Nucella lamellosa collomi</i> (Carson)	<i>Thais collomi</i> Carson	Species, 65N–34N
8–2.5 Ma	<i>Nucella lamellosa shumanensis</i> (Carson)	<i>Nucella lamellosa shumanensis</i> (Carson)	Species, 65N–34N
13 Ma–H	<i>Nucella lima</i> (Martyn)	<i>Nucella lima</i> (Gmelin)	66N–28N; intertidal, among barnacles and mussels
13 Ma–H	<i>Nucella lima</i> (Martyn)	<i>Purpura saxicola</i> Valenciennes	66N–28N
13 Ma–H	<i>Nucella lima</i> (Martyn)	<i>Thais lima</i> Martyn	66N–28N
13 Ma–H	<i>Nucella lima</i> (Martyn)	<i>Thais papillus</i> (Linnaeus)	66N–28N
13 Ma–H	<i>Nucella lima</i> (Martyn)	<i>Thais saxicola</i> Valenciennes	66N–28N
8 Ma–H	<i>Nucella ostrina</i> (Gould)	<i>Thais</i> (<i>Nucella</i>) <i>emarginata</i> forma <i>ostrina</i> Gould	61N–31N
8 Ma–H	<i>Nucella ostrina</i> (Gould)	<i>Thais ostrina</i> (Gould)	61N–31N
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Nucella packi talea</i> Stewart	Genus, 66N–3S, intertidal to 15 m, rocky shore, protected
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Thais</i> (<i>Nucella</i>) <i>packi</i> Clark	Genus, 66N–3S
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Thais</i> (<i>Stromonita</i>) <i>carrizoensis</i> Loel and Corey	Genus, 66N–3S
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Thais carrizoensis</i> Loel and Corey	Genus, 66N–3S
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Thais</i> cf. <i>T. n.sp.</i> Lutz	Genus, 66N–3S
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Thais n.sp.</i> Lutz	Genus, 66N–3S
27–13 Ma	<i>Nucella packi</i> (Clark)	<i>Thais sp.</i>	Genus, 66N–3S
13–8 Ma	<i>Nucella rankini</i> Grant and Eaton	<i>Nucella rankini</i> Grant and Eaton	Genus, 66N–3S
N.D.	<i>Nucella sp.</i>	<i>Polytropa sp.</i>	Genus, 66N–3S
N.D.	<i>Nucella sp.</i>	<i>Nucella sp.</i>	Genus, 66N–3S
N.D.	<i>Nucella sp.</i>	<i>Thais sp. a.</i>	Genus, 66N–3S
5–2.5 Ma	<i>Nucella trancosana</i> (Arnold)	<i>Thais</i> (<i>Nucella</i>) <i>trancosana</i> Arnold	Genus, 66N–3S
5 Ma–H	<i>Nucula</i> (<i>Lamellinucula</i>) <i>exigua</i> Sowerby	<i>Nucula</i> (<i>Lamellinucula</i>) <i>exigua</i> Sowerby	33.7N–3.7S, through Gulf of California; 10 to 140 m
5 Ma–H	<i>Nucula</i> (<i>Lamellinucula</i>) <i>exigua</i> Sowerby	<i>Nucula suprastrata</i> Carpenter	34N–4S, through Gulf of California
N.D.	<i>Nucula sp.</i>	<i>Nucula sp.</i>	Genus, 60N–5S or Chile; 7 to 4060 m
5 Ma–H	<i>Nuculana</i> (<i>Nuculana</i>) aff. <i>N. (N.) leonina</i> (Dall)	<i>Nuculana</i> (<i>Nuculana</i>) aff. <i>N. (N.) leonina</i> (Dall)	55N–32.7N; 350 to 2500 m
5 Ma–H	<i>Nuculana</i> (<i>Nuculana</i>) aff. <i>N. (N.) minuta</i> (Muller)	<i>Nuculana</i> aff. <i>N. minuta</i> (Fabricius)	71.4N–33.3N; 4 to 1900 m
5 Ma–H	<i>Nuculana</i> (<i>Nuculana</i>) cf. <i>N. (N.) leonina</i> (Dall)	<i>Nuculana</i> cf. <i>N. leonina</i> (Dall)	55N–33N
5 Ma–H	<i>Nuculana</i> (<i>Nuculana</i>) <i>fossa</i> (Baird)	<i>Nuculana fossa</i> (Baird)	58N–33N; 20 to 600 m
23–17 Ma	<i>Nuculana</i> (<i>Saccella</i>) <i>amelga</i> Moore	<i>Saccella amelga</i> Moore	Subgenus, 58N–6S
27–23 Ma	<i>Nuculana</i> (<i>Saccella</i>) <i>cahillensis</i> (Arnold)	<i>Leda cahillensis</i> Arnold	Subgenus, 58N–6S
23–17 Ma	<i>Nuculana</i> (<i>Saccella</i>) <i>calkinsi</i> Moore	<i>Saccella calkinsi</i> Moore	Subgenus, 58N–6S
8 Ma–H	<i>Nuculana</i> (<i>Saccella</i>) <i>cellulita</i> (Dall)	<i>Saccella cellulita</i> (Dall)	56N–48N
8 Ma–H	<i>Nuculana</i> (<i>Saccella</i>) <i>cellulita</i> (Dall)	<i>Saccella cellulita</i> (Dall)?	56N–48N

17–13 Ma	<i>Nuculana (Saccella) cf. N. (S.) washingtonensis</i> (Weaver)	<i>Nucula cf. N. washingtonensis</i> Weaver	Subgenus, 58N–6S
17–13 Ma	<i>Nuculana (Saccella) chehalisensis</i> (Weaver)	<i>Nuculana chehalisensis</i> (Weaver)	Subgenus, 58N–6S
13–8 Ma	<i>Nuculana (Saccella) furlongi</i> (Trask)	<i>Volselfa furlongi</i> (Trask)	Subgenus, 58N–6S
13–8 Ma	<i>Nuculana (Saccella) furlongi</i> (Trask)	<i>Leda furlongi</i> Trask	Subgenus, 58N–6S
13–8 Ma	<i>Nuculana (Saccella) furlongi</i> (Trask)	<i>Modiolus furlongi</i> Trask	Subgenus, 58N–6S
5 Ma–H	<i>Nuculana (Saccella) hindsii</i> (Hanley)	<i>Saccella redondoensis</i> (Burch)	28N–8N
27–13 or 5 Ma	<i>Nuculana (Saccella) ochsneri</i> (Anderson and Martin)	<i>Leda ochsneri</i> Anderson	Subgenus, 58N–6S
27–13 or 5 Ma	<i>Nuculana (Saccella) ochsneri</i> (Anderson and Martin)	<i>Leda oschneri</i> Anderson and Martin	Subgenus, 58N–6S
27–13 or 5 Ma	<i>Nuculana (Saccella) ochsneri</i> (Anderson and Martin)	<i>Nuculana (Saccella) ochsneri</i> (Anderson and Martin)	Subgenus, 58N–6S
27–13 or 5 Ma	<i>Nuculana (Saccella) ochsneri</i> (Anderson and Martin)	<i>Nuculana ochsneri</i> (Anderson and Martin)	Subgenus, 58N–6S
27–13 or 5 Ma	<i>Nuculana (Saccella) ochsneri</i> (Anderson and Martin)	<i>Saccella oschneri</i> (Anderson)	Subgenus, 58N–6S
8–2.5 Ma	<i>Nuculana (Saccella) orcutti</i> (Arnold)	<i>Saccella orcutti</i> (Arnold)	Subgenus, 58N–6S
13 Ma–H	<i>Nuculana (Saccella) sp.</i>	<i>Saccella sp.</i>	Subgenus, 58N–6S
13 Ma–H	<i>Nuculana (Saccella) taphria</i> (Dall)	<i>Leda taphria</i> Dall	37N–28N; 5 to 145 m, in sand and clay
13 Ma–H	<i>Nuculana (Saccella) taphria</i> (Dall)	<i>Sachella taphria</i> (Dall)	37N–28N
13 Ma–H	<i>Nuculana (Saccella) taphria</i> (Dall)	<i>Nuculana taphria</i> (Dall)	37N–28N
17?–13? Ma	<i>Nuculana (Saccella?) aff. N. (S.?) ramonensis</i> (Clark)	<i>Nuculana aff. N. ramonensis</i> Clark	Subgenus, 58N–6S
8 Ma–H	<i>Nuculana (Thestylea) cf. N. (T.) hamata</i> (Carpenter)	<i>Nuculana cf. N. hamata</i> (Carpenter)	48N–25N
5 Ma–H	<i>Nuculana cf. N. extenuata</i> (Dall)	<i>Nuculana cf. N. extenuata</i> (Dall)	54N–49N; 2000 to 2900 m
23–17 Ma	<i>Nuculana epacris</i> Moore	<i>Nuculana epacris</i> Moore	Genus, 72N–6S; 3 to 3660 m
N.D.	<i>Nuculana sp.</i>	<i>Leda sp.</i>	Genus, 72N–6S
N.D.	<i>Nuculana sp.</i>	<i>Nuculana n.sp.</i>	Genus, 72N–6S
5–2.5 Ma	<i>Nutricola barbarensis</i> (Arnold)	<i>Psephidia barbarensis</i> Arnold	Genus, 61N–1S; intertidal to 150 m
8 Ma–H	<i>Nutricola cf. N. tantilla</i> (Gould)	<i>Transennella cf. T. tantilla</i> (Gould)	60.8N–28.2N; intertidal to 120 m
5 Ma–H	<i>Nutricola cymata</i> (Dall)	<i>Psephidia cymata</i> Dall	34N–25N
27–17 or 8? Ma	<i>Nutricola joaquinensis</i> (Anderson and Martin)	<i>Transennella joaquinensis</i> Anderson and Martin	Genus, 61N–1S
5 Ma–H	<i>Nutricola lordi</i> (Baird)	<i>Psephis lordi</i> Baird	59.2N–26.2N; intertidal to 22 m
5 Ma–H	<i>Nutricola lordi</i> (Baird)	<i>Psephidia lordi</i> (Baird)	59N–26N
N.D.	<i>Nutricola n.sp.?</i>	<i>Psephidia n.sp.?</i>	Genus, 61N–1S; in shallow water and offshore to 150 m
5 Ma–H	<i>Nutricola ovalis</i> (Dall)	<i>Psephidia lordi</i> (Baird) subsp. <i>ovalis</i> Dall	39.5N–27.7N; 20 to 150 m
863	<i>Nutricola sp.</i>	<i>Psephidia sp.</i>	Genus, 57N–25N
5 Ma–H	<i>Nutricola stephensae</i> (Hertlein and Grant)	<i>Psephidia stephensae</i> Hertlein and Grant	34N–27N; 15 to 90 m
8 Ma–H	<i>Nutricola tantilla</i> (Gould)	<i>Transennella tantilla</i> Gould	60.8N–28.2N; intertidal to 120 m
8 Ma–H	<i>Nutricola tantilla</i> (Gould)	<i>Transennella californica</i> Arnold	61N–28N
8 Ma–H	<i>Nutricola tantilla</i> (Gould)	<i>Transennella tantilla</i> (Gould)	61N–28N
27–17 or 8? Ma	<i>Nutricola? joaquinensis</i> Anderson and Martin	<i>Transennella? joaquinensis</i> Anderson and Martin	Genus, 61N–1S
5–2.5 Ma	<i>Nuttallia jamesi</i> Roth and Guruswami-Naidu	<i>Nuttallia jamesi</i> Roth and Guruswami-Naidu	Genus, 38N–25N
13 Ma–H	<i>Nuttallia nuttallii</i> (Conrad)	<i>Nuttallia nuttallii</i> (Conrad)	38.3N–24.6N, intertidal and foreshore, in sand and gravel
13 Ma–H	<i>Nuttallia nuttallii</i> (Conrad)	<i>Sanguinolaria nuttalli</i> Conrad	38N–25N
13 Ma–H	<i>Nuttallia nuttallii</i> (Conrad)	<i>Sanguinolaria nuttallii</i> Conrad	38N–25N
8–5 Ma	<i>Nuttallia salina</i> Roth and Guruswami-Naidu (Roth and Guruswami-Naidu, 1978)	<i>Nuttallia salina</i> Roth & Guruswami-Naidu (Roth & Guruswami-Naidu, 1971)	Genus, 38N–25N
N.D.	<i>Nuttallia sp.</i>	<i>Sanguinolaria sp.</i>	Genus, 38N–25N; intertidal and foreshore, in sand
5 Ma–H	<i>Ocenebra aff. O. fraseri</i> (Oldroyd)	<i>Ocenebra aff. O. fraseri</i> (Oldroyd)	49N; genus, intertidal to 100 m

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
5 Ma–H	<i>Ocenebra atropurpurea</i> Carpenter	<i>Ocenebra atropurpurea</i> Carpenter	57N–31N
5 Ma–H	<i>Ocenebra barbarensis</i> (Gabb)	<i>Ocenebra barbarensis</i> (Gabb)	37N–34N, rocky bottoms
5 Ma–H	<i>Ocenebra beta</i> (Dall)	<i>Ocenebra beta</i> (Dall)	37N–34N
8–2.5 Ma	<i>Ocenebra</i> cf. <i>O. tenuiscuplta</i> (Carpenter)	<i>Ocenebra</i> cf. <i>O. tenuiscuplta</i> (Carpenter)	Genus, 59N–19N; intertidal to 92 m
8–5 Ma	<i>Ocenebra cierboensis</i> (Grant and Eaton)	<i>Ocenebra cierboensis</i> (Grant and Eaton)	Genus, 59N–19N
17–13 Ma	<i>Ocenebra clarki</i> Addicott	<i>Ocenebra clarki</i> Addicott	Genus, 59N–19N
5–2.5 Ma	<i>Ocenebra coryphaena</i> (Woodring)	<i>Ocenebra coryphaena</i> (Woodring)	Genus, 59N–19N
13–8 Ma	<i>Ocenebra dalli</i> (Clark)	<i>Hemifusus dalli</i> Clark	Genus, 59N–19N
13–8 Ma	<i>Ocenebra dalli</i> (Clark)	<i>Murex (Ocenebra) dalli</i> Clark	Genus, 59N–19N
13–8 Ma	<i>Ocenebra dalli</i> (Clark)	<i>Murex (Ocinebra) dalli</i> Clark	Genus, 59N–19N
13–8 Ma	<i>Ocenebra dalli</i> (Clark)	<i>Murex dalli</i> Clark	Genus, 59N–19N
23–17 Ma	<i>Ocenebra depoensis</i> Moore	<i>Ocenebra depoensis</i> Moore	Genus, 59N–19N
8 Ma–H	<i>Ocenebra foveolata</i> (Hinds)	<i>Ocenebra foveolata</i> (Hinds)	38N–25N
23–13 Ma	<i>Ocenebra gabbiana</i> (Anderson)	<i>Ocenebra gabbiana</i> (Anderson)	Genus, 59N–19N
23–13 Ma	<i>Ocenebra gabbiana</i> (Anderson)	<i>Trophon gabbianum</i> Anderson	Genus, 59N–19N
8 Ma–H	<i>Ocenebra interfossa</i> Carpenter	<i>Ocenebra interfosa</i> Carpenter	56N–32N
8 Ma–H	<i>Ocenebra interfossa</i> Carpenter	<i>Tritonalia</i> cf. <i>T. interfossa</i> (Carpenter)	56N–32N
27–23 Ma	<i>Ocenebra milicentana</i> (Loel and Corey)	<i>Purpura milicentana</i> Loel and Corey	Genus, 59N–19N
27–23 Ma	<i>Ocenebra milicentana</i> (Loel and Corey)	<i>Ocenebra milicentana</i> (Loel and Corey)	Genus, 59N–19N
13–8 Ma	<i>Ocenebra packardii</i> (Clark)	<i>Murex (Ocinebra) packardii</i> Clark	Genus, 59N–19N
13–8 Ma	<i>Ocenebra rodeoensis</i> (Clark)	<i>Murex rodeoensis</i> (Clark)	Genus, 59N–19N
13–8 Ma	<i>Ocenebra selbyensis</i> (Clark)	<i>Murex (Ocinebra) selbyensis</i> Clark	Genus, 59N–19N
13–8 Ma	<i>Ocenebra selbyensis</i> (Clark)	<i>Murex (Ocinebra) selbyensis</i> Clark	Genus, 59N–19N
N.D.	<i>Ocenebra</i> sp.	<i>Tritonalia</i> sp. a	Genus, 59N–19N
N.D.	<i>Ocenebra</i> sp.	<i>Murex</i> sp.	Genus, 59N–19N
N.D.	<i>Ocenebra</i> sp.	<i>Thais</i> sp.	Genus, 59N–19N
N.D.	<i>Ocenebra</i> sp.	<i>Ocenebra</i> sp.	Genus, 59N–19N
8–5 Ma	<i>Ocenebra subangulata waldorfensis</i> Arnold	<i>Ocenebra subangulata waldorfensis</i> Arnold	Species, 38N–34N
8–5 Ma	<i>Ocenebra temelenta</i> (Hanna)	<i>Tritonalia temelenta</i> (Hanna)	Genus, 59N–19N
8–5 Ma	<i>Ocenebra tethys</i> (Nomland)	<i>Tritonalia tethys</i> (Nomland)	Genus, 59N–19N
27–17 Ma	<i>Ocenebra topangensis</i> Arnold	<i>Purpura topangensis</i> (Arnold)	Genus, 59N–19N
27–17 Ma	<i>Ocenebra topangensis</i> Arnold	<i>Ocenebra topangensis</i> Arnold	Genus, 59N–19N
23–13 Ma	<i>Ocenebra trophonoides</i> (Anderson and Martin)	<i>Ocenebra trophonoides</i> (Anderson and Martin)	Genus, 59N–19N
23–13 Ma	<i>Ocenebra trophonoides</i> (Anderson and Martin)	<i>Purpura trophonoides</i> (Anderson and Martin)	Genus, 59N–19N
23–13 Ma	<i>Ocenebra trophonoides</i> (Anderson and Martin)	<i>Thais trophonoides</i> Anderson and Martin	Genus, 59N–19N
8–5 Ma	<i>Ocenebra turris</i> (Nomland)	<i>Purpura turris</i> Nomland	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Fusus (Hemifusus) wilkesana</i> Anderson	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Hemifusus wilkesana</i> Anderson	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Hemifusus wilkesanus</i> Anderson?	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Murex (Ocinebra) topangensis</i> (Arnold)	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Murithais wilkesanaus</i> (Anderson)	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Ocenebra topangensis</i> Arnold	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Ocenebra wilkesana</i> (Anderson)	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Ocenebra topangensis</i> Arnold	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Purpura topangensis</i> (Arnold)	Genus, 59N–19N
27–13 Ma	<i>Ocenebra wilkesana</i> (Anderson)	<i>Tritonalia topangensis</i> (Arnold)	Genus, 59N–19N
27–23 Ma	<i>Ocenebra ynezana</i> (Loel and Corey)	<i>Tritonalia ynezana</i> Loel and Corey	Genus, 59N–19N
27–23 Ma	<i>Ocenebra? dorrancei</i> (Loel and Corey)	<i>Ocenebra dorrancei?</i> (Loel and Corey)	Genus, 59N–19N
27–23 Ma	<i>Ocenebra? dorrancei</i> (Loel and Corey)	<i>Tritonalia dorrancei</i> Loel and Corey	Genus, 59N–19N

N.D. 13 Ma–H	<i>Ocenebra? sp.</i> <i>Ocenebrina lurida</i> (Middendorff) (McLean, 1996)	<i>Tritonalia? sp.</i> <i>Ocenebra lurida</i> (Middendorff)	Genus, 59N–19N 55N–34N; intertidal to 15 m, rare in sublittoral, rocky areas
13 Ma–H	<i>Ocenebrina lurida</i> (Middendorff) (McLean, 1996)	<i>Tritonalia lurida</i> (Middendorff)	55N–34N
13 Ma–H	<i>Ocenebrina lurida</i> (Middendorff) (McLean, 1996)	<i>Ocenebra lurida</i> (Middendorff)	55N–34N
13 Ma–H	<i>Ocenebrina lurida</i> (Middendorff) (McLean, 1996)	<i>Mangilia muricidea</i> Moody	55N–33N; intertidal, rare in sublittoral
27–23 Ma	<i>Oculina panzana</i> Loel and Corey	<i>Oculina panzana</i> Loel and Corey (Cnidaria)	Genus, eastern Pacific, fossil only at 12N and California
17–13 Ma	<i>Odostomia (Belsa) rotundomontana</i> (Keen)	<i>Chrysallida rotundomontana</i> Keen	Genus, 60N–3S; subgenus, 24N and Gulf of California
17–13 Ma	<i>Odostomia (Belsa) rotundomontana</i> (Keen)	<i>Odostomia (Belsa) rotundomontana</i> (Keen)	Genus, 60N–3S; subgenus, 24N and Gulf of California
N.D.	<i>Odostomia (Chrysallida) n.sp.</i> Powell	<i>Odostomia (Chrysallida) n.sp.</i> Powell	Subgenus, 25N–3S
17–13 Ma	<i>Odostomia (Chrysallida?) sequoiana</i> Addicott	<i>Odostomia (Chrysallida?) sequoiana</i> Addicott	Subgenus, 33N–3N, and Gulf of California
17–13 Ma	<i>Odostomia (Evalea) aff. O. (E.) donilla</i> Dall and Bartsch	<i>Odostomia (Evalea) aff. O. (E.) donilla</i> Dall and Bartsch	Subgenus, 33N–3N, Gulf of California
23–13 Ma	<i>Odostomia (Evalea) andersoni</i> Bartsch	<i>Epitonium californica</i> Anderson	Subgenus, 33N–8N, Gulf of California
23–13 Ma	<i>Odostomia (Evalea) andersoni</i> Bartsch	<i>Eulimella californica</i> Anderson and Martin	Subgenus, 33N–8N, and Gulf of California
23–13 Ma	<i>Odostomia (Evalea) andersoni</i> Bartsch	<i>Odostomia (Evalea) andersoni</i> Bartsch	Subgenus, 33N–8N, Gulf of California
23–13 Ma	<i>Odostomia (Evalea) andersoni</i> Bartsch	<i>Pyramidella (Eulimella) californica</i> (Anderson and Martin)	Subgenus, 33N–8N, Gulf of California
5 Ma–H	<i>Odostomia (Evalea) tenuisculpta</i> Carpenter	<i>Odostomia (Evalea) tenuisculpta</i> Carpenter	48N–24N
N.D.	<i>Odostomia (Menestho) n.sp.</i> Powell	<i>Odostomia (Menestho) n.sp.</i> Powell	Subgenus, 32N–8N, through Gulf of California
17–13 Ma	<i>Odostomia (Menestho) repenningi</i> Addicott	<i>Odostomia (Menestho) repenningi</i> Addicott	Subgenus, 32N–3N, and Gulf of California
5 Ma–H	<i>Odostomia cf. O. farallonensis</i> Dall and Bartsch	<i>Odostomia cf. O. farallonensis</i> Dall and Bartsch	38N
5 Ma–H	<i>Odostomia cf. O. lastra</i> Dall and Bartsch	<i>Odostomia cf. O. lastra</i> Dall and Bartsch	34N–33N
5 Ma–H	<i>Odostomia cf. O. phanea</i> Dall and Bartsch	<i>Odostomia cf. O. phanea</i> Dall and Bartsch	37N
5 Ma–H	<i>Odostomia cf. O. pratoma</i> Dall and Bartsch	<i>Odostomia cf. O. pratoma</i> Dall and Bartsch	34N
5 Ma–H	<i>Odostomia cf. O. valdezi</i> Dall and Bartsch	<i>Odostomia cf. O. valdezi</i> Dall and Bartsch	48N–33N
N.D.	<i>Odostomia sp.</i>	<i>Odostomia sp.</i>	Genus, 72N–23N; intertidal to 640 m
5 Ma–H	<i>Oenopota reticulata</i> Brown	<i>Oenopota reticulata</i> Brown	Circumboreal-33N
27–13 Ma	<i>Oliva (Oliva) californica</i> Anderson	<i>Oliva futheryana</i> Anderson	Genus, 25N–5S, through Gulf of California; intertidal, sandspits
27–13 Ma	<i>Oliva (Oliva) californica</i> Anderson	<i>Oliva californica</i> Anderson	Genus, 25N–5S, through Gulf of California
13 Ma–H	<i>Oliva (Oliva) spicata</i> (Röding)	<i>Oliva spicata</i> (Bolten)	Through Gulf of California–8N
13 Ma–H	<i>Oliva (Oliva) spicata</i> (Röding)	<i>Oliva spicata</i> Bolten	Through Gulf of California–8N
13–8 Ma	<i>Oliva simondsi</i> Trask	<i>Oliva simondsi</i> Trask	Genus, 25N–5S, through Gulf of California
N.D.	<i>Oliva sp.</i>	<i>Oliva sp.</i>	Genus, 25N–5S, through Gulf of California
N.D.	<i>Olivella sp.</i>	<i>Olivella sp.</i>	Genus, 57N–south of equator
8 Ma–H	<i>Olivella (Callianax) intorta</i> Carpenter	<i>Olivella intorta</i> Carpenter	25N–23N, through Gulf of California
13 Ma–H	<i>Olivella (Olivella) gracilis</i> (Broderip and Sowerby)	<i>Olivella gracilis</i> Broderip and Sowerby	28N–8N, through Gulf of California
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Astyris pedroana</i> Conrad	Genus, 57N–south of equator; intertidal to 92 m
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Olivella (Olivella) ischnon</i> Keen	Genus, 57N–south of equator
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Olivella ischnon</i> Keen	Genus, 57N–south of equator
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Olivella pedroana</i> (Conrad) <i>subpedroana</i> Loel and Corey	Genus, 57N–south of equator
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Olivella pedroana</i> (Conrad) <i>subpedroana</i> Loel and Corey	Genus, 57N–south of equator
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Olivella pedroana</i> Conrad	Genus, 57N–south of equator
27–13 Ma	<i>Olivella (Olivella) ischnon</i> Keen	<i>Olivella pedroana</i> Conrad (in Anderson and Martin, 1914)	Genus, 57N–south of equator
27–23 Ma	<i>Olivella (Olivella) santana</i> Loel and Corey	<i>Olivella (Callinax?) santana</i> Loel and Corey	Genus, 57N–south of equator
27–23 Ma	<i>Olivella (Olivella) santana</i> Loel and Corey	<i>Olivella santana</i> Loel and Corey	Genus, 57N–south of equator
8 Ma–H	<i>Olivella baetica</i> Carpenter	<i>Olivella baetica</i> Carpenter	57N–23N; lagoons at low tide, offshore in shallow water, sand or mud

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13 Ma–H	<i>Olivella biplicata</i> (Sowerby)	<i>Olivella biplicata</i> Conrad	49N–25N; common at lagoon entrances, offshore in shallow water
13 Ma–H	<i>Olivella biplicata</i> (Sowerby)	<i>Olivella biplicata</i> (Sowerby)	49N–25N
13 Ma–H	<i>Olivella biplicata</i> (Sowerby)	<i>Olivella biplicata</i> Sowerby	49N–25N
13 Ma–H	<i>Olivella biplicata</i> (Sowerby)	<i>Olivella biplicata</i> Sowerby (<i>O. futeyana</i> Anderson)	49N–25N
17? or 13 Ma–H	<i>Olivella pedroana</i> (Conrad)	<i>Olivella pedroana</i> Conrad	55N–23N
17? or 13 Ma–H	<i>Olivella pedroana</i> (Conrad) (synonym of <i>O.</i> <i>baetica</i> ?)	<i>Olivella pedroana</i> (Conrad)	55N–23N
N.D.	<i>Olivella</i> sp.	<i>Olivella</i> sp.	Genus, 57N–south of equator
5–2.5 Ma	<i>Opalia</i> (<i>Opalia</i>) <i>varicostata anomala</i> Stearns	<i>Opalia varicostata anomala</i> Stearns	Genus, 55N–25N; intertidal to 92 m, on rocks
8–2.5 Ma	<i>Opalia</i> (<i>Opalia</i>) <i>varicostata</i> Stearns	<i>Opalia varicostata</i> Stearns	Genus, 55N–25N
13 Ma–H	<i>Opalia</i> (<i>Opalia</i>) <i>wroblewskyi</i> (Mörch)	<i>Epitonium borealis</i> Gould	55N–32N
13 Ma–H	<i>Opalia</i> (<i>Opalia</i>) <i>wroblewskyi</i> (Mörch)	<i>Opalia wroblewskyi</i> (Moersch)	55N–32N
23–13 Ma	<i>Opalia</i> (<i>Rugatiscala</i>) <i>williamsoni</i> (Anderson and Martin)	<i>Opalia</i> (<i>Rugatiscala</i>) <i>williamsoni</i> (Anderson and Martin)	Genus, 55N–25N; subgenus not living
23–13 Ma	<i>Opalia</i> (<i>Rugatiscala</i>) <i>williamsoni</i> (Anderson and Martin)	<i>Opalia williamsoni</i> (Anderson and Martin)	Genus, 55N–25N; subgenus not living
23–13 Ma	<i>Opalia</i> (<i>Rugatiscala</i>) <i>williamsoni</i> (Anderson and Martin)	<i>Epitonium williamsoni</i> Anderson and Martin	Genus, 55N–25N; subgenus not living
N.D.	<i>Opalia</i> n.sp.?	<i>Opalia</i> n.sp.?	Genus, 55N–25N
8 Ma–H	<i>Ophiodermella cancellata</i> (Carpenter)	<i>Ophiodermella cancellata</i> (Carpenter)	48N–32N
17–13 Ma	<i>Ophiodermella electilis</i> (Keen)	<i>Moniliopsis electilis</i> Keen	Genus, 48N–23N; 9 to 72 m
17–13 Ma	<i>Ophiodermella electilis</i> (Keen)	<i>Ophiodermella electilis</i> (Keen)	Genus, 48N–23N
8–2.5 Ma	<i>Ophiodermella graciosa</i> (Arnold)	“ <i>Drillia</i> ” <i>graciosa</i> Arnold	Genus, 48N–23N
8–2.5 Ma	<i>Ophiodermella graciosa</i> (Arnold)	<i>Ophiodermella graciosa</i> (Arnold)	Genus, 48N–23N
5–2.5 Ma	<i>Ophiodermella graciosa</i> (Arnold)	<i>Ophiodermella graciosa</i> (Arnold)	Genus, 48N–23N
5 Ma–H	<i>Ophiodermella incisa</i> (Carpenter)	<i>Ophiodermella incisa</i> (Carpenter)	48N–32N
5 Ma–H	<i>Ophiodermella incisa</i> (Carpenter)	<i>Turris</i> (<i>Drillia</i>) <i>modestus</i> Moody	48N–32N
5 Ma–H	<i>Ophiodermella incisa</i> (Carpenter)	<i>Drillia incisa</i> Carpenter	48N–32N
5 Ma–H	<i>Ophiodermella incisa</i> (Carpenter)	<i>Drillia inermis</i> Hinds	48N–32N
8–2.5 Ma	<i>Ophiodermella incisa</i> (Carpenter) <i>quinquecincta</i> (Grant and Gale)	<i>Moniliopsis incisa</i> (Carpenter) var. <i>quinquecincta</i> Grant and Gale	Species, 48N–32N
13–8 Ma	<i>Ophiodermella kirkensis</i> (Clark)	<i>Turris kirkensis</i> Clark	Genus, 48N–23N
8–2.5 Ma	<i>Ophiodermella mercedensis</i> (Martin)	<i>Moniliopsis graciosa</i> (Arnold) var. <i>mercedensis</i> (Martin)	Genus, 48N–23N
8–2.5 Ma	<i>Ophiodermella mercedensis</i> (Martin)	<i>Drillia mercedensis</i> Martin	Genus, 48N–23N
8–2.5 Ma	<i>Ophiodermella mercedensis</i> (Martin)	<i>Moniliopsis mercedensis</i> (Martin)	Genus, 48N–23N
8–2.5 Ma	<i>Ophiodermella mercedensis</i> (Martin)	<i>Turris</i> (<i>Drillia</i>) <i>mercedensis</i> (Martin)	Genus, 48N–23N
N.D.	<i>Ophiodermella</i> sp.	<i>Clathrodrillia</i> n.sp.	Genus, 48N–23N
23–13 Ma	<i>Ophiodermella temblorensis</i> (Anderson and Martin)	<i>Clathrodrillia temblorensis</i> (Anderson and Martin)	Genus, 48N–23N
23–13 Ma	<i>Ophiodermella temblorensis</i> (Anderson and Martin)	<i>Drillia temblorensis</i> Anderson and Martin	Genus, 48N–23N
23–13 Ma	<i>Ophiodermella temblorensis</i> (Anderson and Martin)	<i>Ophiodermella temblorensis</i> (Anderson and Martin)	Genus, 48N–23N
23–13 Ma	<i>Ophiodermella temblorensis</i> (Anderson and Martin)	<i>Turricula temblorensis</i> (Anderson and Martin)	Genus, 48N–23N

8–5 Ma	<i>Ophioplocus</i> sp. (Echinodermata)	<i>Ophioplocus</i> sp. ? (Echinodermata)	Questionable taxonomic assignment; intertidal to >200 m
N.D.	<i>Ophiurites</i> (<i>Ophiuroglyphus</i> ?) sp. (Echinodermata)	<i>Ophiurites</i> (<i>Ophiuroglyphus</i> ?) sp. (Echinodermata)	Questionable taxonomic assignment
5–2.5 Ma	<i>Oppenheimiopecten coalingaensis</i> (Arnold) 5–2.5 Ma	<i>Pecten coalingaensis</i> Arnold	Genus, 28N–4S; 18 to 274 m; shallow seas (Moore, 1984)
23–17 & 8–5 Ma	<i>Oppenheimiopecten hartmanni</i> (Hertlein) 23–17 Ma and 8–5 Ma	<i>Oppenheimiopecten hartmanni</i> (Hertlein)	Genus, 28N–4S
23–17 & 8–2.5 Ma	<i>Oppenheimiopecten heimi</i> (Hertlein) 23–17 Ma and 8–2.5 Ma	<i>Oppenheimiopecten heimi</i> (Hertlein)	Genus, 28N–4S
13–8 Ma	<i>Oppenheimiopecten juanensis</i> (Grant and Stevenson) 13–8 Ma	<i>Pecten</i> (<i>Pecten</i>) <i>juanensis</i> Grant and Stevenson	Genus, 28N–4S
8–2.5 Ma	<i>Oppenheimiopecten lecontei</i> (Arnold) 8–2.5 Ma	<i>Oppenheimiopecten lecontei</i> (Arnold)	Genus, 28N–4S
5 Ma–H	<i>Oppenheimiopecten vodgesi</i> (Arnold) 5 Ma–Holocene	<i>Pecten</i> (<i>Oppenheimiopecten</i>) <i>vodgesi</i> Arnold	28N–1S; 4 to 420 m; Keen (1971, p. 87) reported from 155 m
8–2.5 Ma	<i>Ostrea</i> (<i>Ostrea</i>) <i>atwoodi</i> Gabb	<i>Ostrea atwoodii</i> Gabb	Genus, 57N–8N; intertidal to 70 m, on firm substrate
N.D.	<i>Ostrea</i> sp.	<i>Ostrea</i> sp.	N.D.
13–8 Ma	<i>Ostrea</i> ? <i>haitiensis</i> Sowerby	<i>Ostrea haitiensis</i> Sowerby	Atlantic Ocean; taxonomy in question
13 Ma–H	<i>Ostreola conchaphila</i> (Carpenter)	<i>Ostrea lurida</i> Carpenter	31N–8N (<i>Agerostrea</i> of Bernard [1983, p.23]); intertidal to 92 m
13 Ma–H	<i>Ostreola</i> ? <i>megodon</i> (Hanley)	<i>Ostrea megodon</i> Hanley	28N–5S
13 Ma–H	<i>Ostreola</i> ? <i>megodon</i> (Hanley)	<i>Ostrea veatchii</i> Gabb	28N–5S
13 Ma–H	<i>Ostreola</i> ? <i>megodon</i> (Hanley)	<i>Ostrea</i> (<i>Agerostrea</i>) <i>megedon</i> (Hanley)	28N–5S
13 Ma–H	<i>Ostreola</i> ? <i>megodon</i> (Hanley) (<i>Agerostrea</i> of authors)	<i>Undulostrea megedon</i> (Hanley)	28N–5S; shallow water, offshore to 110 m
13 Ma–H	<i>Ostreola</i> ? <i>megodon</i> (Hanley) (<i>Ostrea</i> [<i>Lopha</i>] of authors)	<i>Ostrea cerrosensis</i> Gabb	28N–5S
27–23 Ma	<i>Ostreola</i> ? <i>venturana</i> (Loel and Corey)	<i>Ostrea venturana</i> Loel and Corey	Genus, 28N–5S (<i>Agerostrea</i> of Bernard [1983, p. 23])
5 Ma–H	<i>Pacipecten</i> aff. <i>P. tumbesensis</i> (Sowerby) 5 Ma–Holocene	<i>Pecten</i> sp. nov. aff. <i>P. paucicostatus</i> Carpenter	31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Aequipecten andersoni</i> (Arnold)	Genus, 31N–5S; below low-tide line to 128 m
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Aequipecten raymondi</i> (Clark)	Genus, 31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Leptopecten andersoni</i> (Arnold) n. var. a	Genus, 31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Lyropecten andersoni</i> (Arnold)	Genus, 31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Pecten</i> (<i>Aequipecten</i>) <i>andersoni</i> Arnold	Genus, 31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>andersoni</i> Arnold	Genus, 31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Pecten andersoni</i> Arnold	Genus, 31N–5S
23–13 Ma	<i>Pacipecten andersoni andersoni</i> (Arnold) 23–13 Ma	<i>Pecten discus</i> Conrad	Genus, 31N–5S
27–17 Ma	<i>Pacipecten andersoni barkerianus</i> (Arnold) 27–17 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>andersoni barkerianus</i> (Arnold)	Genus, 31N–5S
27–17 Ma	<i>Pacipecten andersoni barkerianus</i> (Arnold) 27–17 Ma	<i>Pecten</i> (<i>Plagioctenium</i>) <i>andersoni barkerianus</i> Arnold	Genus, 31N–5S
27–17 Ma	<i>Pacipecten andersoni barkerianus</i> (Arnold) 27–17 Ma	<i>Leptopecten andersoni</i> (Arnold)	Genus, 31N–5S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23–17 Ma	<i>Pacipecten andersoni clemonensis</i> (Etherington) 23–17 Ma	<i>Aequipecten andersoni clemonensis</i> (Etherington)	Genus, 31N–5S
27–23 Ma	<i>Pacipecten andersoni subandersoni</i> (Loel and Corey) 27–23 Ma	<i>Pecten andersoni</i> ? Arnold	Genus, 31N–5S
27–23 Ma	<i>Pacipecten andersoni subandersoni</i> (Loel and Corey) 27–23 Ma	<i>Pecten (Plagiectenium) andersoni subandersoni</i> Loel and Corey	Genus, 31N–5S
27–23 Ma	<i>Pacipecten andersoni subandersoni</i> (Loel and Corey)? 27–23 Ma	<i>Aequipecten andersoni subandersoni</i> (Loel and Corey)	Genus, 31N–5S
27–23 Ma	<i>Pacipecten andersoni subandersoni</i> (Loel and Corey)? 27–23 Ma	<i>Aequipecten andersoni</i> (Arnold) <i>subandersoni</i> (Loel and Corey)	Genus, 31N–5S
13–8 Ma	<i>Pacipecten bilineatus</i> (Clark) 13–8 Ma	<i>Pecten bilineatus</i> Clark	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Aequipecten discus</i> (Conrad)	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Aequipecten raymondi</i> (Clark)	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Chlamys discus</i> (Conrad)	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Leptopecten discus</i> (Conrad)	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Pecten (Aequipecten) discus</i> Conrad	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Pecten (Aequipecten) discus</i> Conrad (<i>raymondi</i> Clark)	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Pecten andersoni gonocostatus</i> Trask	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Pecten cierboensis</i> Clark	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Pecten raymondi brionianus</i> Trask	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Pecten raymondi</i> Clark	Genus, 31N–5S
13–5 Ma	<i>Pacipecten discus</i> (Conrad) 13–5 Ma	<i>Plagiectenium</i> cf. <i>P. raymondi</i> (Clark)	Genus, 31N–5S
13–8 Ma	<i>Pacipecten pabloensis</i> (Conrad) of Arnold 13–8 Ma	<i>Pecten pabloensis</i> Conrad	Genus, 31N–5S
13–8 Ma	<i>Pacipecten tolmani</i> (Hall and Ambrose) 13–8 Ma	<i>Pecten tolmani</i> Hall and Ambrose	Genus, 31N–5S
5 Ma–H	<i>Pacipecten tumbezensis</i> (d'Orbigny) 5 Ma–H (<i>Leptopecten</i> of authors)	<i>Pecten (Aequipecten) tumbezensis</i> d'Orbigny	31N–5S, Gulf of California; below low-tide line to depths of 128 m
13–8 Ma	<i>Pacipecten weaveri</i> (Clark) 13–8 Ma	<i>Pecten weaveri</i> Clark	Genus, 31N–5S
8 Ma–H	<i>Pandora (Heteroclidus) punctata</i> Conrad	<i>Pandora (Clidophora) punctata</i> Conrad	49.9N–26.2N, subtidal to 50 m
8 Ma–H	<i>Pandora (Heteroclidus) punctata</i> Conrad	<i>Pandora (Heteroclidus) punctata</i> Conrad	50N–26N
8 Ma–H	<i>Pandora (Heteroclidus) punctata</i> Conrad	<i>Pandora punctata</i> Conrad	50N–26N
5 Ma–H	<i>Pandora (Pandorella) bilirata</i> Conrad	<i>Pandora (Pandorella) bilirata</i> Conrad	58.3N–23N, Gulf of California; subtidal to 250 m
5 Ma–H	<i>Pandora (Pandorella) bilirata</i> Conrad	<i>Pandora bilirata</i> Conrad	58N–23N
8 Ma–H	<i>Pandora (Pandorella) filosa</i> (Carpenter)	<i>Pandora filosa</i> Carpenter	60.0N–31.8N; 20 to 300 m
5 Ma–H	<i>Pandora (Pandorella) wardiana</i> A. Adams	<i>Pandora grandis</i> Dall	71.4N–48.4N; 40 to 200 m
17–13 Ma	<i>Pandora scapha</i> Gabb	<i>Pandora scapha</i> Gabb	Genus, 60N–4S; species, Paleocene
N.D.	<i>Pandora</i> sp.	<i>Kennerlia</i> sp.	Genus, 60N–4S
N.D.	<i>Pandora</i> sp.	<i>Pandora</i> sp.	Genus, 60N–4S; 3 to 366 m
8 Ma–H	<i>Panomya ampla</i> Dall	<i>Panomya ampla</i> Dall	71.4N–47.5N; 10 to 50 m
8 Ma–H	<i>Panomya ampla</i> Dall	<i>Panomya chrysis</i> Dall	71N–48N
5 Ma–H	<i>Panomya</i> cf. <i>P. priapus</i> (Tilesius)	<i>Panomya</i> cf. <i>P. beringiana</i> Dall	71.4N–59.5N; 10 to 50 m
5 Ma–H	<i>Panomya</i> cf. <i>P. priapus</i> (Tilesius)	<i>Panomya</i> cf. <i>P. beringianus</i> Dall	71N–60N
5 Ma–H	<i>Panomya priapus</i> (Tilesius)	<i>Panomya beringiana</i> Dall	71N–60N
N.D.	<i>Panomya</i> sp.	<i>Panomya</i> sp.	Genus, 71N–48N; 10 to 100 m
17–8 Ma	<i>Panope tenuis</i> Wiedey	<i>Panopea tenuis</i> Wiedey	Genus, 58N–27N
17–8 Ma	<i>Panope tenuis</i> Wiedey	<i>Panope tenuis</i> Wiedey	Genus, 58N–27N
27 Ma–H	<i>Panopea (Panopea) abrupta</i> (Conrad)	<i>Panope (Panope) abrupta</i> (Conrad)	57.6N–33.6N (to 28N according to some authors); subtidal to 100 m

27 Ma–H	<i>Panopea (Panopea) abrupta</i> (Conrad)	<i>Panope (Panope) generosa</i> (Gould)	58N–34N
27 Ma–H	<i>Panopea (Panopea) abrupta</i> (Conrad)	<i>Panope generosa</i> (Gould)	58N–34N; sand mud of bays
27 Ma–H	<i>Panopea (Panopea) abrupta</i> (Conrad)	<i>Panope generosa</i> Gould	58N–34N
27 Ma–H	<i>Panopea (Panopea) abrupta</i> (Conrad)	<i>Panopea abrupta</i> (Conrad)	58N–34N
27 Ma–H	<i>Panopea (Panopea) abrupta</i> (Conrad)	<i>Panopea generosa</i> Gould	58N–34N
27–5 Ma	<i>Panopea estrellana</i> (Conrad)	<i>Panopea estrellana</i> (Conrad)	Genus, 58N–27N; intertidal, buried about 1 m in sand or mud
27–5 Ma	<i>Panopea estrellana</i> (Conrad)	<i>Panope estrellana</i> Conrad	Genus, 58N–27N; subtidal to 100 m
8–5 Ma	<i>Panopea oregonensis</i> Howe	<i>Panope oregonensis</i> Howe	Genus, 58N–27N
27–23 Ma	<i>Panopea ramonensis</i> Clark	<i>Panopea ramonensis</i> Clark	Genus, 58N–27N
5–2.5? Ma	<i>Papyridea crockeri</i> (Strong and Hertlein)	<i>Papyridea crockeri</i> (Strong and Hertlein)	28N–23N; in depths to 175 m
27–23 Ma	<i>Papyridea</i> sp.	<i>Cardium (Papyridea)</i> n.sp.	Genus, 28N–4S; beaches, sandbars and to depths of 175 m
5 Ma–H	<i>Paracyanthus stearnsii</i> Verrill (Cnidaria)	<i>Paracyanthus stearnsii</i> Verrill (Cnidaria)	48N–34N
23–17 Ma	<i>Parvammusium astoriana</i> Moore	<i>Parvammusium astoriana</i> Moore	60N–32.7N (to 25 according to some authors); 15 to 1530 m
8 Ma–H	<i>Parvammusium alaskense</i> (Dall) 8 Ma–Holocene	<i>Parvammusium alaskense</i> (Dall)	60N–33N
8 Ma–H	<i>Parvammusium alaskense</i> (Dall) 8 Ma–Holocene	<i>Parvammusium alaskensis</i> (Dall)	60N–33N
8 Ma–H	<i>Parvammusium alaskense</i> (Dall) 8 Ma–Holocene	<i>Parvammusium riversi</i> (Arnold)	60N–33N
8 Ma–H	<i>Parvammusium alaskense</i> (Dall) 8 Ma–Holocene	<i>Pecten (Propeamusium) levis</i> Moody	60N–33N
8 Ma–H	<i>Parvammusium alaskense</i> (Dall) 8 Ma–Holocene	<i>Pecten (Propeamusium) riversi</i> Arnold	60N–33N
13? or 5 Ma–H	<i>Parvilucina mazatlanica</i> Carpenter	<i>Parvilucina mazatlanica</i> Carpenter	29N–1S; 4 to 1024 m
13 Ma–H	<i>Parvilucina tenuisculpta</i> (Carpenter)	<i>Lucina tenuisculpta</i> (Carpenter)	60.9N–28.2N; subtidal to 300 m
13 Ma–H	<i>Parvilucina tenuisculpta</i> (Carpenter)	<i>Parvilucina tenuisculpta</i> (Carpenter)	61N–28N
13 Ma–H	<i>Parvilucina tenuisculpta</i> (Carpenter)	<i>Phacoides tenuisculpta</i> Carpenter	61N–28N
5–2.5 Ma	<i>Parvilucina tenuisculpta intensa</i> (Dall)	<i>Lucina (Parvilucina) tenuisculpta intensa</i> Dall	Species, 61N–28N
8 Ma–H	<i>Patinopecten caurinus</i> (Gould) 8 Ma–Holocene	<i>Pecten caurinus</i> Gould	59N–36.3N; 10 to 200 m
8 Ma–H	<i>Patinopecten caurinus</i> (Gould) 8 Ma–Holocene	<i>Pecten (Patinopecten) caurinus</i> Gould	59N–36N
8 Ma–H	<i>Patinopecten caurinus</i> (Gould) 8 Ma–Holocene	<i>Patinopecten caurinus</i> (Gould)	59N–36N
8 Ma–H	<i>Patinopecten caurinus</i> (Gould) 8 Ma–Holocene	<i>Pecten</i> cf. <i>P. meeki</i> Conrad	59N–36N
17–13 Ma	<i>Patinopecten haywardensis</i> (Lutz) 17–13 Ma	<i>Pecten (Patinopecten) haywardensis</i> Lutz	Genus, 59N–36N; 10 to 275 m, mixed sand and mud substrate
17–13 Ma	<i>Patinopecten haywardensis calaverasensis</i> (Hall) 17–13 Ma	<i>Pecten haywardensis calaverasensis</i> Hall	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten healeyi</i> (Arnold) 8–2.5 Ma	<i>Patinopecten healeyi</i> (Arnold)	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten healeyi</i> (Arnold) 8–2.5 Ma	<i>Pecten (Patinopecten) healeyi</i> Arnold	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten healeyi</i> (Arnold) 8–2.5 Ma	<i>Pecten (Patinopecten) healeyi sanclementensis</i> Susuki and Stadum	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten healeyi</i> (Arnold) 8–2.5 Ma	<i>Pecten healeyi</i> Arnold	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten lohri</i> (Hertlein) 8–2.5 Ma	<i>Pecten (Patinopecten) lohri</i> Hertlein	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten lohri</i> (Hertlein) 8–2.5 Ma	<i>Patinopecten lohri</i> (Hertlein)	Genus, 59N–36N
8–2.5 Ma	<i>Patinopecten lohri</i> (Hertlein) 8–2.5 Ma	<i>Pecten oweni</i> Arnold	Genus, 59N–36N
23–17 Ma	<i>Patinopecten oregonensis cancellosus</i> Moore	<i>Patinopecten oregonensis cancellosus</i> Moore	Genus, 59N–36N
17–8 Ma	<i>Patinopecten propatulus</i> (Conrad) 18–10.5 Ma (Smith, 1991a, p. 38)	<i>Pecten propatulus</i> Conrad	Genus, 59N–36N
N.D.	<i>Patinopecten</i> sp.	<i>Patinopecten</i> sp.	Genus, 59N–36N
5–2.5 Ma	<i>Pecten (Pecten) aletes</i> Hertlein 5–2.5 Ma	<i>Pecten (Pecten) aletes</i> Hertlein	Subgenus, 38N–1S
8–1 Ma	<i>Pecten (Pecten) bellus</i> (Conrad) 8–1 Ma	<i>Pecten bellus</i> forma <i>hemphilli</i> Dall	Subgenus, 38N–1S
8–1 Ma	<i>Pecten (Pecten) bellus</i> (Conrad) 8–1 Ma	<i>Pecten bellus hemphilli</i> Dall	Subgenus, 38N–1S
8–1 Ma	<i>Pecten (Pecten) bellus</i> (Conrad) 8–1 Ma	<i>Pecten hemphilli</i> Dall	Subgenus, 38N–1S
8–1 Ma	<i>Pecten (Pecten) bellus</i> (Conrad) 8–1 Ma	<i>Pecten (Pecten) bellus hemphilli</i> Dall	Subgenus, 38N–1S
8–1 Ma	<i>Pecten (Pecten) bellus</i> (Conrad) 8–1 Ma	<i>Pecten (Pecten) bellus</i> Conrad	Subgenus, 38N–1S
8–1 Ma	<i>Pecten (Pecten) cf. P. (P.) bellus</i> (Conrad) 8–1 Ma	<i>Pecten</i> cf. <i>P. auburyi</i> Arnold	Subgenus, 38N–1S
8–2.5 Ma	<i>Pecten (Pecten) lecontei</i> Arnold 8–2.5 Ma	<i>Pecten (Pecten) lecontei</i> Arnold	Subgenus, 38N–1S

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
N.D.	<i>Pecten</i> sp.	<i>Pecten</i> sp.	Questionable taxonomic assignment for <i>Pecten</i> sp.
23 Ma–H	<i>Pegophysema edentuloides</i> (Verrill)	<i>Anodontia edentuloides</i> (Verrill)	30N–28N; 33 to 155 m
23 Ma–H	<i>Pegophysema edentuloides</i> (Verrill)	<i>Lucina edentuloides</i> Hanna	30N–28N
23 Ma–H	<i>Pegophysema edentuloides</i> (Verrill)	<i>Lucina edentuloides</i> Verrill	30N–28N
23 Ma–H	<i>Pegophysema edentuloides</i> (Verrill)	<i>Pegophysema edentuloides</i> (Verrill)	30N–28N
23 Ma–H	<i>Pegophysema edentuloides</i> (Verrill)	<i>Pegophysema edentuloides</i> (Verrill)	30N–28N
5 Ma–H	<i>Penitella conradi</i> Valenciennes	<i>Penitella conradi</i> Valenciennes	49.8N–27.7N; intertidal to 20 m; genus, intertidal to 73 m
8 Ma–H	<i>Penitella penita</i> (Conrad)	<i>Penitella penita</i> (Conrad)	60.9N–26.2N; intertidal to 10 m, bores, clay or sandstone, open coast
8 Ma–H	<i>Penitella penita</i> (Conrad)	<i>Pholadidea penita</i> (Conrad)	61N–26N
13? or 8 Ma–H	<i>Periploma</i> cf. <i>P. discus</i> Stearns	<i>Periploma</i> cf. <i>P. discus</i> Stearns	37N–23N
13–8 Ma	<i>Periploma clarki</i> Nomland	<i>Periploma clarki</i> Nomland	Genus, 71N–4S; intertidal to 380 m
13? or 8 Ma–H	<i>Periploma discus</i> Stearns	<i>Periploma discus</i> Stearns	37N–23N
8 Ma–H	<i>Periploma planiusculum</i> Sowerby	<i>Periploma planiuscula</i> Schumacher	34N–4S; offshore from surf zone along exposed beaches
23–17 Ma	<i>Periploma sanctaecrucis</i> Arnold?	<i>Periploma sanctaecrucis</i> Arnold?	Genus, 71N–4S
5–2.5 Ma	<i>Periploma stenopa</i> Woodring	<i>Periploma cryphia stenopa</i> Woodring	Genus, 71N–4S
5–2.5 Ma	<i>Periploma stenopa</i> Woodring	<i>Periploma stenopa</i> Woodring	Genus, 71N–4S
5 Ma–H	<i>Petalocochus montereyensis</i> Dall	<i>Petalocochus montereyensis</i> Dall	37N–34N; rock at low tide and sublittoral; genus, to 275 m
13 Ma–H	<i>Petricola (Rupellaria) carditoides</i> (Conrad)	<i>Petricola caritoides</i> (Conrad)?	57.1N–26.2N; intertidal to 46 m
13 Ma–H	<i>Petricola (Rupellaria) carditoides</i> (Conrad)	<i>Petricola (Rupellaria) caritoides</i> Conrad	57N–26N
13 Ma–H	<i>Petricola (Rupellaria) carditoides</i> (Conrad)	<i>Petricola cylindracea</i> Deshayes	57N–26N
13 Ma–H	<i>Petricola (Rupellaria) carditoides</i> (Conrad)	<i>Petricola carditoides</i> (Conrad) (<i>buwaldi</i> Clark)	57N–26N
13–2.5 Ma	<i>Petricola buwaldi</i> Clark	<i>Petricola buwaldi</i> Clark	Genus, 57N–5S; intertidal to 73 m
N.D.	<i>Petricola</i> sp.	<i>Petricola</i> sp.	Genus, 57N–5S
N.D.	<i>Phacoides</i> sp.	<i>Phacoides</i> sp.	Questionable taxonomic assignment
N.D.	<i>Pholadidea</i> sp.	<i>Pholadidea</i> sp.	Genus, 28N–1S; boring into soft sandstone or shale along shore
13? or 5–2.5 Ma	<i>Pholadomya candida dalli</i> Olsson	<i>Pholadomya candida dalli</i> Olsson	Genus not living
23–17 Ma	<i>Pholadomya?</i> <i>kemensis</i> Wiedey	<i>Pholadomya kemensis</i> Wiedey	Genus not living
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Amphissa posunculensis</i> Anderson and Martin	Subgenus, 30N in Gulf of California–5N; offshore, 37 to 402 m
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Amphissa wahrhaftigi</i> Adegoke	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Antillophos dumbleana chehalisensis</i> (Weaver)	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Antillophos posunculensis</i> (Anderson and Martin)	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Cancellaria posunculensis</i> Anderson and Martin	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Nassa chehalisensis</i> Weaver	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Phos (Antillophos) dumbleana</i> Anderson in Hanna	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Phos dubleanus</i> Anderson and Hanna	Subgenus, 30N in Gulf of California–5N

27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Phos dumbleana</i> (Anderson)	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Phos dumbleanus</i> Anderson	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Phos. sp.</i>	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Pleurotoma (Clathurella) dumblei</i> Anderson	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Tritiaria (Antillophos) dumblei</i> Anderson	Subgenus, 30N in Gulf of California–5N
27–13 or 8? Ma	<i>Phos (Antillophos) posunculensis</i> (Anderson and Martin)	<i>Urosalpinx dumblei</i> (Anderson)	Subgenus, 30N in Gulf of California–5N
N.D.	<i>Phos (Antillophos) sp.</i>	<i>Antillophos? sp.</i>	Subgenus, 30N in Gulf of California–5N
27–23 Ma	<i>Phos (Antillophos) woodringi</i> Addicott	<i>Antillophos woodringi</i> Addicott	Subgenus, 30N in Gulf of California–5N
13–2.5 Ma	<i>Pinna (Pinna) latrania</i> Hanna	<i>Pinna (Pinna) latrania</i> Hanna	Genus, 28N–10N; on mud bars
13–2.5 Ma	<i>Pinna (Pinna) latrania</i> Hanna	<i>Pinna latrania</i> Hanna	Genus, 28N–10N
13–8 Ma	<i>Pinna (Pinna) mendenhalli</i> Hanna	<i>Pinna mendenhalli</i> Hanna	Genus, 28N–10N
27–23 Ma	<i>Pinna (Pinna) stocktoni</i> Loel and Corey	<i>Pinna stocktoni</i> Loel and Corey	Genus, 28N–10N
N.D.	<i>Pinna sp.</i>	<i>Pinna sp. a.</i> Grant and Eaton	Genus, 28N–10N
N.D.	<i>Pinna sp.</i>	<i>Pinna sp. b</i>	Genus, 28N–10N
13–8 Ma	<i>Pitar (Lamelliconcha) sp.</i>	<i>Pitar (Lamelliconcha) sp.</i>	Subgenus, 31N–5S; intertidal to 110 m
13–8 Ma	<i>Pitar (Pitarella) n.sp.</i> Powell	<i>Pitar (Pitarella) n.sp.</i> Powell	Subgenus, 31N–5S; 4 to 80 m
13–8 Ma	<i>Pitar behri</i> (Clark)	<i>Amiantis behri</i> (Clark)	Genus, 37N–18S; 45 to 220 m
13–8 Ma	<i>Pitar behri</i> (Clark)	<i>Pitaria behri</i> Clark	Genus, 37N–18S
13 or 5 Ma–H	<i>Pitar newcombianus</i> (Gabb)	<i>Pitar newcombianus</i> (Gabb)	36.6N–32.9N; 45 to 220 m
13 or 5 Ma–H	<i>Pitar newcombianus</i> (Gabb)	<i>Macrocallista (Chionella) newcombiana</i> Carpenter	37N–33N
13 or 5 Ma–H	<i>Pitar newcombianus</i> (Gabb)	<i>Pitar newcombianus</i> Gabb	37N–33N
23–5 Ma	<i>Pitar oregonensis</i> (Conrad)	<i>Marcia oregonensis</i> (Conrad)	Genus, 37N–18S
23–5 Ma	<i>Pitar oregonensis</i> (Conrad)	<i>Pitar oregonensis</i> (Conrad)	Genus, 37N–18S
23–5 Ma	<i>Pitar oregonensis</i> (Conrad)	<i>Pitar oregonensis</i> Conrad	Genus, 37N–18S
N.D.	<i>Pitar sp.</i>	<i>Pitar sp.</i>	Genus, 37N–18S
8–2.5 Ma	<i>Placunanomia californica</i> Arnold	<i>Placunanomia californica</i> Arnold	Genus, 26N–1S; intertidal or offshore to 46 m
27–23 Ma	<i>Placunanomia granti</i> Hertlein	<i>Placunanomia granti</i> Hertlein	Genus, 26N–1S
8–5 Ma	<i>Placunanomia hannabli</i> Jordan and Hertlein	<i>Placunanomia hannabli</i> Jordan and Hertlein	Genus, 26N–1S
N.D.	<i>Placunanomia sp.</i>	<i>Placunanomia sp.</i>	Genus, 26N–1S
13 Ma–H	<i>Platyodon cancellatus</i> (Conrad)	<i>Mya (Platydon) (Platyodon) cancellatus</i>	53.6N–28.3N; intertidal, boring in clay to 20 m
13 Ma–H	<i>Platyodon cancellatus</i> (Conrad)	<i>Platyodon cancellatus</i> Conrad	54N–28N
8–2.5 Ma	<i>Platyodon colobus</i> Woodring	<i>Platyodon colobus</i> Woodring	Genus, 55N–2S; intertidal
27–23 Ma	<i>Platyodon piedraensis</i> Wiedey	<i>Platyodon piedraensis</i> Wiedey	Genus, 55N–2S
13? or 5 Ma–H	<i>Plicatula penicillata</i> Carpenter	<i>Plicatula penicillata</i> Carpenter	2S north to 0; in rock crevices or inside shells of dead mollusks
5–2.5 Ma	<i>Plicifusus (Latifusus) indomitus</i> Talmadge (Talmadge, 1971)	<i>Plicifusus (Latifusus) indomitus</i> Talmadge (Talmadge, 1971)	Genus, 72N–33N
N.D.	<i>Plicifusus sp.</i>	<i>Plicifusus sp.</i>	Genus, 72N–33N; 18 to 1098 m
13 Ma–H	<i>Pododesmus (Monia) cepio</i> (Gray)	<i>Pododesmus cepio</i> (Gray)	58N–28N; intertidal to 90 m, attached to rocks or other shells
13? or 8 Ma–H	<i>Pododesmus (Monia) cf. P. (M.) macroschisma</i> (Deshayes)	<i>Pododesmus cf. P. macroschisma</i> (Deshayes)	70.6N–23.5N; intertidal to 90 m, attached to rocks or other shells
13? or 8 Ma–H	<i>Pododesmus (Monia) macroschisma</i> (Deshayes)	<i>Monia macroschisma</i> (Deshayes)	71N–24N
13? or 8 Ma–H	<i>Pododesmus (Monia) macroschisma</i> (Deshayes)	<i>Monia macroschisma</i> Deshayes	71N–24N
13? or 8 Ma–H	<i>Pododesmus (Monia) macroschisma</i> (Deshayes)	<i>Pododesmus (Monia) macroschisma</i> (Deshayes)	71N–24N
13? or 8 Ma–H	<i>Pododesmus (Monia) macroschisma</i> (Deshayes)	<i>Pododesmus macroschisma</i> Deshayes	71N–24N
13? or 8 Ma–H	<i>Pododesmus (Monia) macroschisma</i> (Deshayes)	<i>Pododesmus macroschismus</i> (Deshayes)	71N–24N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
N.D.	<i>Pododesmus</i> sp.	<i>Pododesmus</i> n.sp.	Genus, 71N–4S; intertidal to 90 m, rocks or other shells
17–8 Ma	<i>Polinices (Euspira) diabloensis</i> (Clark)	<i>Natica (Euspira) diabloensis</i> Clark	Subgenus, 51N–28N
17–8 Ma	<i>Polinices (Euspira) diabloensis</i> (Clark)	<i>Natica diabloensis</i> Clark	Subgenus, 51N–28N
17–8 Ma	<i>Polinices (Euspira) diabloensis</i> (Clark)	<i>Polinices (Polinices) diabloensis</i> (Clark)	Subgenus, 51N–28N
17–8 Ma	<i>Polinices (Euspira) diabloensis</i> (Clark)	<i>Euspira diabloensis</i> (Clark)	Subgenus, 51N–28N
17–2.5 Ma	<i>Polinices (Euspira) galianoi</i> Dall	<i>Polinices galianoi</i> Dall	Genus, 72N–5S; subgenus, 51N–28N
17–2.5 Ma	<i>Polinices (Euspira) galianoi</i> Dall	<i>Natica (Euspira) galianoi</i> (Dall)	Subgenus, 51N–28N
17? or 13–8 Ma	<i>Polinices (Euspira) kirkensis</i> (Clark)	<i>Neverita kirkensis</i> Clark	Subgenus, 51N–28N
17? or 13–8 Ma	<i>Polinices (Euspira) kirkensis</i> (Clark)	<i>Natica (Euspira) kirkensis</i> Clark	Subgenus, 51N–28N
13? or 8 Ma–H	<i>Polinices (Euspira) lewisii</i> (Gould)	<i>Natica lewisii</i> Gould	51N–28N; in bays and lagoons, also on sandy substrate offshore
13? or 8 Ma–H	<i>Polinices (Euspira) lewisii</i> (Gould)	<i>Polinices lewisii</i> (Gould)	51N–28N; intertidal to 46 m, sand flats and estuaries, mud flats
13? or 8 Ma–H	<i>Polinices (Euspira) lewisii</i> (Gould)	<i>Polinices lewisi</i> (Gould)	51N–28N
13? or 8 Ma–H	<i>Polinices (Euspira) lewisii</i> (Gould)	<i>Lunatia lewisii</i> (Gould)	51N–28N
13? or 8 Ma–H	<i>Polinices (Euspira) lewisii</i> (Gould)	<i>Polinices (Euspira) lewisii</i> (Gould)	51N–28N
5–2.5 Ma	<i>Polinices (Euspira) orbicularis</i> (Nomland)	<i>Natica (Euspira) orbicularis</i> Nomland	Subgenus, 51N–28N
N.D.	<i>Polinices (Euspira)</i> sp.	<i>Lunatia</i> sp.	Subgenus, 51N–28N
5 Ma–H	<i>Polinices (Lunatia)</i> cf. <i>P. (L.) caurina</i> (Gould)	<i>Lunatia</i> cf. <i>L. caurina</i> (Gould)	64N–33N
17–13 Ma	<i>Polinices (Neverita) alta</i> Arnold	<i>Neverita (Glossaulax) alta</i> (Arnold)	Subgenus, 42N–21N, through Gulf of California; intertidal to 46 m
17–13 Ma	<i>Polinices (Neverita) alta</i> Arnold	<i>Polinices (Neverita) recluziana alta</i> Arnold	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Natica callosa</i> Gabb	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Neverita (Glossaulax) andersoni</i> (Clark)	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Neverita andersoni</i> (Clark)	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Neverita callosa</i> Conrad	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Neverita recluziana callosa</i> Gabb	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Polinices (Neverita) ocoyana</i> Conrad	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Polinices (Neverita) recluziana andersoni</i> Clark	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Polinices andersoni</i> Clark	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Polinices recluzianus andersoni</i> Clark	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Polinices recluzianus</i> (Deshayes) <i>andersoni</i> Clark	Subgenus, 42N–21N, through Gulf of California
27–13 Ma	<i>Polinices (Neverita) andersoni</i> (Clark)	<i>Polinices recluzianus andersoni</i> (Clark)	Subgenus, 42N–21N, through Gulf of California
13–8 Ma	<i>Polinices (Neverita) arnoldi</i> (Clark)	<i>Natica (Neverita) arnoldi</i> Clark	Subgenus, 42N–21N, through Gulf of California
13–8 Ma	<i>Polinices (Neverita) arnoldi</i> (Clark)	<i>Natica arnoldi</i> Clark	Subgenus, 42N–21N, through Gulf of California
13–8 Ma	<i>Polinices (Neverita) arnoldi</i> (Clark)	<i>Neverita arnoldi</i> (Clark)	Subgenus, 42N–21N, through Gulf of California
8–5 Ma	<i>Polinices (Neverita) convexa</i> (Nomland)	<i>Neverita convexa</i> (Nomland)	Subgenus, 42N–21N, through Gulf of California
23–13 Ma	<i>Polinices (Neverita) jamesae</i> (Moore)	<i>Neverita (Glossaulax) jamesae</i> Moore	Subgenus, 42N–21N, through Gulf of California
8–5 Ma	<i>Polinices (Neverita) orbicularis</i> (Nomland)	<i>Polinices orbicularis</i> (Nomland)	Subgenus, 42N–21N, through Gulf of California
13–8 Ma	<i>Polinices (Neverita) pabloensis</i> (Clark)	<i>Natica (Neverita) pabloensis</i> Clark	Subgenus, 42N–21N, through Gulf of California
13–8 Ma	<i>Polinices (Neverita) pabloensis</i> (Clark)	<i>Neverita pabloensis</i> (Clark)	Subgenus, 42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Natica recluziana andersoni</i> Clark	42N–21N, through Gulf of California, also on mud
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Natica recluziana</i> Petit	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Neverita (Glossaulax) recluziana</i> (Deshayes)?	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Neverita recluziana</i> (Deshayes)?	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Neverita recluziana</i> Petit	42N–21N, through Gulf of California

27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Polinices (Neverita) reclusiana</i> (Deshayes)	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Polinices (Neverita) reclusianus</i> (Deshayes)	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Polinices (Neverita) recluzianus callosus</i> (Gabb)	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes)	<i>Polinices recluziana</i> Deshayes	42N–21N, through Gulf of California
27 Ma–H	<i>Polinices (Neverita) recluzianus</i> (Deshayes) (see Keen, 1971, p. 482)	<i>Natica (Neverita) recluziana</i> Petit	42N–21N, through Gulf of California; intertidal to 46 m, sandflats
N.D.	<i>Polinices (Neverita)</i> sp.	<i>Neverita</i> sp.	Subgenus, 42N–21N, through Gulf of California, intertidal to 2815 m
13 Ma–H	<i>Polinices (Polinices) uber</i> (Valenciennes)	<i>Polinices uber</i> (Valenciennes)	32N–5S, through Gulf of California; intertidal and 4 to 90 m
13 Ma–H	<i>Polinices (Polinices) uber</i> (Valenciennes)	<i>Natica uber</i> Valenciennes	32N–5S, through Gulf of California
27–13 Ma	<i>Polinices (Polinices) victoriana</i> Clark and Arnold	<i>Polinices canalis</i> Moore	Subgenus, 32N–5S, through Gulf of California; 980 to 3055 m
27–13 Ma	<i>Polinices (Polinices) victoriana</i> Clark and Arnold	<i>Polinices lewisii</i> (Gould)	Subgenus, 32N–5S, through Gulf of California
27–13 Ma	<i>Polinices (Polinices) victoriana</i> Clark and Arnold	<i>Polinices lewisii</i> Gould?	Subgenus, 32N–5S, through Gulf of California
N.D.	<i>Polinices</i> sp.	<i>Polinices victoriana</i> Clark and Arnold	Subgenus, 32N–5S, through Gulf of California
N.D.	<i>Polinices</i> sp.	<i>Polinices</i> sp.	Genus, 72N–5S; intertidal to 3055 m, on mud or sand
27–5 Ma	<i>Polymesoda dumblei</i> (Anderson)	<i>Natica</i> sp.	Genus, 72N–5S
27–5 Ma	<i>Polymesoda dumblei</i> (Anderson)	<i>Cyrena (Corbicula) dumblei</i> Anderson	Genus, 23N–5S; in mud
27–5 Ma	<i>Polymesoda dumblei</i> (Anderson)	<i>Corbicula dumblei</i> F.M. Anderson	Genus, 23N–5S
27–5 Ma	<i>Polymesoda dumblei</i> (Anderson)	<i>Corbicula dumblei</i> Anderson	Genus, 23N–5S
13–5 Ma	<i>Polymesoda gabbiana</i> (Henderson)	<i>Polymesoda dumblei</i> (Anderson)	Genus, 23N–5S
13–5 Ma	<i>Polymesoda gabbiana</i> (Henderson)	<i>Cyrena californica</i> Gabb	Genus, 23N–5S
13–5 Ma	<i>Polymesoda gabbiana</i> (Henderson)	<i>Corbicula gabbiana</i> (Henderson)	Genus, 23N–5S
13–5 Ma	<i>Polymesoda gabbiana</i> (Henderson)	<i>Corbicula gabbiana</i> (Henderson)	Genus, 23N–5S
N.D.	<i>Polymesoda</i> sp.	<i>Cyrena (Corbicula) californica</i> Gabb	Genus, 23N–5S
5–2.5 Ma	<i>Polymesoda? kettlemanensis</i> (Arnold)	<i>Corbicula</i> sp.	Genus, 23N–5S
13 Ma–H	<i>Polystira albida</i> (Perry)	<i>Corbicula kettlemanensis</i> (Arnold)	Genus, 23N–5S
17–13 Ma	<i>Polystira englishi</i> Addicott	<i>Turris albida?</i> Perry	28N–15N, Caribbean; 48 to 225 m
		<i>Polystira englishi</i> Addicott	Genus, 28N–3S, and Gulf of California; 20 to 225 m
13? or 5–2.5 Ma	<i>Porites carrizensis</i> Vaughan	<i>Porites carrizensis</i> Vaughan (Cnidaria)	“Reef-corals,” genus living Gulf of California
5 Ma–H	<i>Poromya (Dermatomya) tenuiconcha</i> (Dall)	<i>Dermatomya tenuiconcha</i> Dall	55N–36N; genus, 73 to 2928 m
23–17 Ma	<i>Portlandia reaganii</i> (Dall)	<i>Portlandia (Portlandella) reaganii</i> (Dall)	Genus, 70.4N–54N; 10 to 100 m
8–2.5 Ma	<i>Priscofusus cammani</i> (Dall)	<i>Turris cammani</i> Dall	Genus not living
23–17 Ma	<i>Priscofusus</i> cf. <i>P. coli</i> (Dall)	<i>Priscofusus</i> cf. <i>P. coli</i> (Dall)	Genus not living
27–13 Ma	<i>Priscofusus</i> cf. <i>P. geniculus</i> (Conrad)	<i>Progabbia</i> cf. <i>P. oregonensis</i> (Conrad)	Genus not living
27–13 Ma	<i>Priscofusus</i> cf. <i>P. geniculus</i> (Conrad)	<i>Priscofusus</i> cf. <i>P. hecxi</i> (Arnold) (?)	Genus not living
17–13 Ma	<i>Priscofusus empireensis</i> (Anderson and Martin)	<i>Fusinus empireensis</i> Anderson and Martin	Genus not living
27–13 Ma	<i>Priscofusus geniculus</i> (Conrad)	<i>Fusinus (Priscofusus) geniculus</i> (Conrad)	Genus not living
27–13 Ma	<i>Priscofusus geniculus</i> (Conrad)	<i>Fusinus geniculus</i> Conrad	Genus not living
27–13 Ma	<i>Priscofusus geniculus</i> (Conrad)	<i>Fussinus hecoxae</i> (Arnold)	Genus not living
27–13 Ma	<i>Priscofusus geniculus</i> (Conrad)	<i>Priscofusus geniculus</i> (Conrad)	Genus not living
27–13 Ma	<i>Priscofusus medialis</i> (Conrad)	<i>Priscofusus lincolniensis</i> (Anderson and Martin)	Genus not living
27–13 Ma	<i>Priscofusus medialis</i> (Conrad)	<i>Hinia? lincolniensis</i> (Anderson and Martin)	Genus not living
27–13 Ma	<i>Priscofusus medialis</i> (Conrad)	<i>Priscofusus medialis</i> (Conrad)	Genus not living
N.D.	<i>Priscofusus</i> sp.	<i>Priscofusus</i> n.sp.	Genus not living
5 Ma–H	<i>Pristes oblongus</i> Carpenter	<i>Pristes oblongus</i> Carpenter	33N–27N; intertidal, in mantle cavity of <i>Stenoplax</i> (chiton)
23–17 Ma	<i>Propeamussium</i> cf. <i>P. clallamensis</i> (Arnold)	<i>Propeamussium</i> cf. <i>P. clallamensis</i> (Arnold)	Genus, 45N–6N; 18 to 4500 m
5 Ma–H	<i>Propebela tabulata</i> (Carpenter)	<i>Mangelia</i> cf. <i>tabulatus</i> Carpenter	Alaska or 37N–24N
13 Ma–H	<i>Protothaca (Callithaca) tenerrima</i> (Carpenter)	<i>Callithaca tenerrima</i> (Carpenter)	57.1N–27.6N; intertidal to 30 m, firm sandy mud, bays and sloughs
13 Ma–H	<i>Protothaca (Callithaca) tenerrima</i> (Carpenter)	<i>Paphia tenerrima</i> (Carpenter)	57N–28N; when living, commonly present with <i>Saxidomus nuttalli</i>

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13 Ma–H	<i>Protothaca (Callithaca) tenerrima</i> (Carpenter)	<i>Protothaca (Callithaca) tenerrima</i> Carpenter	57N–28N
13 Ma–H	<i>Protothaca (Callithaca) tenerrima</i> (Carpenter)	<i>Protothaca tenerrima</i> (Carpenter)	57N–28N
13 Ma–H	<i>Protothaca (Callithaca) tenerrima</i> (Carpenter)	<i>Tapes tenerrima</i> Carpenter	57N–28N
17 Ma–H	<i>Protothaca (Leukcoma)</i> aff. <i>P. (L.) asperrima</i> (Sowerby)	<i>Protothaca (Leucoma?)</i> n.sp. aff. <i>P. (L.)</i> <i>asperrima</i> (Sowerby)	Gulf of California–5S
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Tapes staminea</i> (Conrad)	60.8N–22.9N; intertidal to 10 m, abundant in sandy bays
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Paphia staminea</i> Conrad	61N–23N
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Paphia staminea</i> (Conrad)	61N–23N
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Protothaca staminea</i> (Conrad)	61N–23N
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Venerupis staminea</i> (Conrad)	61N–23N
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Protothaca (Protothaca) staminea</i> (Conrad)	61N–23N
17? or 13 Ma–H	<i>Protothaca (Protothaca) staminea</i> (Conrad)	<i>Venerupis (Protothaca) staminea</i> (Conrad)	61N–23N
17? or 5 Ma–H	<i>Protothaca (Tropithaca)</i> aff. <i>P. (T.) grata</i> (Say)	<i>Protothaca</i> aff. <i>P. grata</i> Say	27N–20S
23? or 13–2.5 Ma	<i>Protothaca</i> cf. <i>P. staley</i> i (Gabb)	<i>Paphia</i> cf. <i>staley</i> i (Gabb)	Genus, 61N–20S
5–2.5 Ma	<i>Protothaca grata</i> (Say) <i>tarda</i> (Stewart)	<i>Protothaca grata</i> (Say) <i>tarda</i> (Stewart)	Species, 27N–20S
5–2.5 Ma	<i>Protothaca grata</i> (Say) <i>tarda</i> (Stewart)	<i>Venerupis grata tarda</i> Stewart	Species, 27N–20S
8–5 or 2.5? Ma	<i>Protothaca laciniata</i> (Carpenter) <i>hannibali</i> (Howe)	<i>Securella staley</i> i (Gabb) subsp. <i>hannibali</i> (Howe)	Species, 36.8N–26.8N, linteridial to 5 m, sand or sandy mud in bays
8–5 or 2.5? Ma	<i>Protothaca laciniata</i> (Carpenter) <i>hannibali</i> (Howe)	<i>Protothaca staley</i> i (Gabb) <i>hannibali</i> (Howe)	Species, 37N–27N
8–5 or 2.5? Ma	<i>Protothaca laciniata</i> (Carpenter) <i>hannibali</i> (Howe)	<i>Venerupis laciniata hannibali</i> (Howe)	Species, 37N–27N
N.D.	<i>Protothaca</i> sp.	<i>Tapes</i> sp.	Genus, 61N–20S
N.D.	<i>Protothaca</i> sp.	<i>Paphia</i> sp.	Genus, 61N–20S
23? or 13–2.5 Ma	<i>Protothaca staley</i> i (Gabb)	<i>Tapes staley</i> i Gabb	Genus, 61N–20S
23? or 13–2.5 Ma	<i>Protothaca staley</i> i (Gabb)	<i>Chione staley</i> i Gabb	Genus, 61N–20S
23? or 13–2.5 Ma	<i>Protothaca staley</i> i (Gabb)	<i>Paphia staley</i> i Gabb	Genus, 61N–20S
23? or 13–2.5 Ma	<i>Protothaca staley</i> i (Gabb)	<i>Protothaca staley</i> i (Gabb)	Genus, 61N–20S
23? or 13–2.5 Ma	<i>Protothaca staley</i> i (Gabb)	<i>Venerupis staley</i> ii (Gabb)	Genus, 61N–20S
8 Ma–H	<i>Prunum (Microspira) labiatum</i> (Kiener, ex Valenciennes)	<i>Marginella</i> cf. <i>M. albuminosa</i> Dall	Caribbean
23–17 Ma	<i>Psephaea (Miopleiona) indurata</i> (Conrad)	<i>Psephaea (Miopleiona) indurata</i> (Conrad)	Genus, living in Japanese waters
N.D.	<i>Psephaea (Miopleiona)</i> sp.	<i>Miopleiona</i> sp.	Genus, living in Japanese waters
27–23 Ma	<i>Psephaea (Miopleiona) weaveri</i> (Tegland)	<i>Psephaea (Miopleiona) weaveri</i> (Tegland)	Genus, living in Japanese waters
8–2.5 Ma	<i>Psephaea oregonensis</i> (Dall)	<i>Fulgoraria (Psephia) oregonensis</i> (Dall)	Genus, living in Japanese waters
8–2.5 Ma	<i>Psephaea oregonensis</i> (Dall)	<i>Miopleiona oregonensis</i> Dall	Genus, living in Japanese waters
8–2.5 Ma	<i>Psephaea oregonensis</i> (Dall)	<i>Psephaea oregonensis</i> (Dall)	Genus, living in Japanese waters
8–2.5 Ma	<i>Psephaea oregonensis</i> (Dall)	<i>Fulgraria oregonensis</i> (Dall)	Genus, living in Japanese waters
17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Mactra (Pseudocardium) densata</i> (Conrad)	Genus, 45N–40N, Japan
17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Mactra densata</i> Conrad	Genus, 45N–40N, Japan
17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Mulinia densata</i> Conrad	Genus, 45N–40N, Japan

17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Mulinia densata</i> var. A.	Genus, 45N–40N, Japan
17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Pseudocardium densatum</i> (Conrad)	Genus, 45N–40N, Japan
17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Pseudocardium densatum</i> (Conrad) <i>gabbii</i> Rémond	Genus, 45N–40N, Japan
17–2.5 Ma	<i>Pseudocardium densatum</i> (Conrad)	<i>Pseudocardium gabbii</i> Rémond	Genus, 45N–40N, Japan
17–13 Ma	<i>Pseudocardium densatum minor</i> (Arnold)	<i>Mulinia densata</i> Conrad <i>minor</i> Arnold	Genus, 45N–40N, Japan
17–13 Ma	<i>Pseudocardium densatum minor</i> (Arnold)	<i>Pseudocardium densatum</i> (Conrad) <i>minor</i> (Arnold)	Genus, 45N–40N, Japan
17–13 Ma	<i>Pseudocardium densatum minor</i> (Arnold)	<i>Pseudocardium densatum minor</i> Arnold	Genus, 45N–40N, Japan
13–8 Ma	<i>Pseudocardium pabloensis</i> (Packard)	<i>Mactra pabloensis</i> (Packard)	Genus, 45N–40N, Japan
13–8 Ma	<i>Pseudocardium pabloensis</i> (Packard)	<i>Mulinia pabloensis</i> Packard	Genus, 45N–40N, Japan
13–8 Ma	<i>Pseudocardium pabloensis</i> (Packard)	<i>Pseudocardium pabloensis</i> (Packard)	Genus, 45N–40N, Japan
27–13 Ma	<i>Pseudocardium panzanum</i> (Loel and Corey)	<i>Pseudocardium panzanum</i> (Loel and Corey)	Genus, 45N–40N, Japan
27–13 Ma	<i>Pseudocardium panzanum</i> (Loel and Corey)	<i>Mulinia panzana</i> Loel and Corey	Genus, 45N–40N, Japan
N.D.	<i>Pseudocardium</i> sp.	<i>Pseudocardium</i> sp.	Genus, 45N–40N, Japan
5 Ma–H	<i>Pseudochama exogyra</i> (Conrad)?	<i>Pseudochama exogyra</i> (Conrad)?	38.3N–22.9N; intertidal to 25 m
8–2.5 Ma	<i>Pseudochama</i> sp.	<i>Pseudochama</i> sp.	Genus, 44N–6S; intertidal to 137 m, common intertidal to 55 m
8–2.5 Ma	<i>Pseudoliomesus sulculatus</i> (Dall)	<i>Liomesus sulculatus</i> Dall	Genus, 72N–55N
5–2.5 Ma	<i>Pseudomelatoma</i> aff. <i>P. penicillata</i> (Carpenter)	<i>Pseudomelatoma</i> aff. <i>P. semiinflata</i> Grant and Gale	34N–25N; intertidal and offshore, among rocks at low tide
5–2.5 Ma	<i>Pseudomelatoma</i> aff. <i>P. penicillata</i> (Carpenter)	<i>Pseudomelatoma</i> aff. <i>P. moesta</i> (Carpenter)	34N–25N
5–2.5 Ma	<i>Pseudomelatoma fleenerensis</i> (Martin)	<i>Boreotrophon fleenerensis</i> Martin	Genus, 40N–25N; one species in Gulf of California; intertidal to 73 m
5–2.5 Ma	<i>Pseudomelatoma fleenerensis</i> (Martin)	<i>Drillia fleenerensis</i> Martin	Genus, 40N–25N
13 Ma–H	<i>Pseudomelatoma penicillata</i> (Carpenter)	<i>Pseudomelatoma penicillata</i> (Carpenter)	34N–25N; intertidal and offshore
17–13 Ma	<i>Pteria berryi</i> Adegoke	<i>Pteria berryi</i> Adegoke	Genus, 34N–5S; in shallow water, in diving range of pearl divers
27–23 or 13? Ma	<i>Pteria hertleini</i> Wiedey	<i>Pteria hertleini</i> Wiedey	Genus, 34N–5S
23–13 Ma	<i>Pteria jordani</i> Wiedey	<i>Pteria jordani</i> Wiedey	Genus, 34N–5S
27–23 Ma	<i>Pteria rositae</i> Hertlein	<i>Pteria rositae</i> Hertlein	Genus, 34N–5S
13–2.5 Ma	<i>Pteropurpura</i> cf. <i>P. eldridgei</i> (Arnold)	<i>Maxwellia</i> cf. <i>M. eldridgei</i> (Arnold)	Genus, 57N–5S, through Gulf of California
8 Ma–H	<i>Pteropurpura</i> cf. <i>P. festiva</i> (Hinds)	<i>Jaton</i> cf. <i>J. festivus</i> (Hinds)	34N–27N; mud and rock in bays, at low tide on exposed coasts
13–2.5 Ma	<i>Pteropurpura eldridgei</i> (Arnold)	<i>Murithais eldridgei</i> (Arnold)	Genus, 57N–5S, through Gulf of California
13–2.5 Ma	<i>Pteropurpura eldridgei</i> (Arnold)	<i>Jaton eldridgei</i> (Arnold)	Genus, 38N–8N; intertidal to 137 m, on rocks
13–2.5 Ma	<i>Pteropurpura eldridgei</i> (Arnold)	<i>Maxwellia eldridgei</i> (Arnold)	Genus, 38N–8N
8 Ma–H	<i>Pteropurpura festiva</i> (Hinds)	<i>Jaton festiva</i> (Hinds)	34N–27N, large specimens common in muddy areas in bays
8 Ma–H	<i>Pteropurpura festiva</i> (Hinds)	<i>Jaton</i> (<i>Shaskyus</i>) <i>festivus</i> (Hinds)	34N–27N; intertidal to 137 m, on rocks.
8 Ma–H	<i>Pteropurpura festiva</i> (Hinds)	<i>Triremis festiva</i> Hinds	34N–27N; mud and rock in bays, at low tide on exposed coasts
5 Ma–H	<i>Pteropurpura trialata</i> (Sowerby)	<i>Pteropurpura trialata</i> (Sowerby)	34N–32N
N.D.	<i>Pterynotus</i> sp.	<i>Pterynotus</i> sp.	Genus, w. coast Baja California; 27N in Gulf of California–3S; 22 to 110 m
5 Ma–H	<i>Puncturella</i> cf. <i>P. cooperi</i> Carpenter	<i>Puncturella</i> cf. <i>P. cooperi</i> Carpenter	55N–33N
5–2.5 Ma	<i>Puncturella cooperi</i> aphales Woodring	<i>Puncturella cooperi</i> aphales Woodring	Genus, 58N–23N; intertidal to 146 m
5 Ma–H	<i>Puncturella galeata</i> (Gould)	<i>Puncturella galeata</i> (Gould)	54N–34N
N.D.	<i>Purpura</i> sp.	<i>Purpura</i> n.sp.? Loel and Corey (1932)	Questionable taxonomic assignment
13–2.5 Ma	<i>Pycnodonte</i> (<i>Pycnodonte</i>) <i>erici</i> (Hertlein)	<i>Ostrea erici</i> Hertlein	Genus not living
27–13 Ma	<i>Pycnodonte</i> (<i>Pycnodonte</i>) <i>ynezana</i> (Loel and Corey)	<i>Ostrea eldridgei</i> (Arnold) <i>ynezana</i> Loel and Corey	Genus not living
27–13 Ma	<i>Pycnodonte</i> (<i>Pycnodonte</i>) <i>ynezana</i> (Loel and Corey)	<i>Ostrea eldridgei yneziana</i> Loel and Corey	Genus not living
27–13 Ma	<i>Pycnodonte?</i> (<i>Crenostrea?</i>) <i>eldridgei</i> (Arnold)	<i>Crassostrea</i> cf. <i>C. eldridgei</i> (Arnold)	Genus not living
27–13 Ma	<i>Pycnodonte?</i> (<i>Crenostrea?</i>) <i>eldridgei</i> (Arnold)	<i>Ostrea eldridgei</i> Arnold	Genus not living
13? or 5–2.5 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>heermanni</i> (Conrad)	<i>Pycnodonte heermanni</i> (Conrad)	Genus not living
13? or 5–2.5 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>heermanni</i> (Conrad)	<i>Ostrea heermanni</i> Conrad	Genus not living
27–23 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>heermanni</i> (Conrad) (= <i>P. [P.?] wiedeyi</i> [Hertlein])	<i>Ostrea</i> cf. <i>heermanni</i> Conrad	Genus not living
27–13 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>howelli</i> (Wiedey)	<i>Crassostrea howelli</i> (Wiedey)	Genus not living

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27–13 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>howelli</i> (Wiedey)	<i>Ostrea howelli</i> Wiedey	Genus not living
27–17 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>loeli</i> (Hertlein)	<i>Ostrea loeli</i> Hertlein	Genus not living
27–17 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>loeli</i> (Hertlein)	<i>Ostrea vespertina</i> (Conrad) <i>loeli</i> (Hertlein)	Genus not living
27–17 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>loeli</i> (Hertlein)	<i>Ostrea vespertina loeli</i> (Hertlein)	Genus not living
27–23 Ma	<i>Pycnodonte?</i> (<i>Pycnodonte?</i>) <i>wiedeyi</i> (Hertlein)	<i>Ostrea wiedeyi</i> Hertlein	Genus not living
23–13 Ma	<i>Pyramidella</i> (<i>Longchaeus</i>) <i>cooperi</i> Anderson and Martin	<i>Pyramidella</i> (<i>Longchaeus</i>) <i>cooperi</i> Anderson and Martin	Subgenus, 37N–3S, and Gulf of California; intertidal to 26 m
23–13 Ma	<i>Pyramidella</i> (<i>Longchaeus</i>) <i>cooperi</i> Anderson and Martin	<i>Pyramidella cooperi</i> Anderson and Martin	Subgenus, 37N–3S, and Gulf of California
N.D.	<i>Pyramidella</i> (<i>Longchaeus</i>) sp.	<i>Pyramidella</i> sp.	Subgenus, 37N–3S, and Gulf of California
23–13 Ma	<i>Pyramidella</i> (<i>Syrnola</i>) <i>ochsneri</i> (Anderson and Martin)	<i>Pyramidella</i> (<i>Symola</i>) <i>ochsneri</i> (Anderson and Martin)	Genus, 37N–3S, intertidal to 36 m, on ellgrass
23–13 Ma	<i>Pyramidella</i> (<i>Syrnola</i>) <i>ochsneri</i> (Anderson and Martin)	<i>Syrnola scandix</i> Keen	Genus, 37N–3S; subgenus living in Japanese waters
23–13 Ma	<i>Pyramidella</i> (<i>Syrnola</i>) <i>ochsneri</i> (Anderson and Martin)	<i>Eulimella ochsneri</i> Anderson and Martin	Genus, 37N–3S; subgenus living in Japanese waters
23–13 Ma	<i>Pyramidella</i> (<i>Syrnola</i>) <i>ochsneri</i> (Anderson and Martin)	<i>Pyramidella</i> (<i>Eulimella</i>) <i>ochsneri</i> (Anderson and Martin)	Genus, 37N–3S; subgenus living in Japanese waters
N.D.	<i>Pyramidella</i> n.sp. Powell	<i>Pyramidella</i> n.sp. Powell	Genus, 37N–3S
13–8 Ma	<i>Raeta longior</i> (Grant and Gale)	<i>Anatina</i> (<i>Raeta</i>) <i>plicatella</i> (Lamarck) var. <i>longior</i> Grant and Gale	Genus, 34N–21S; 25 to 45 m
17–13 Ma	<i>Raeta traskii</i> (Conrad)	<i>Lutaria traskii</i> Conrad	Genus, 34N–21S
N.D.	<i>Raeta?</i> sp.	<i>Raeta?</i> n.sp.	Genus, 33.7N–21.4S; 2 to 20 m
8–2.5 Ma	<i>Ranella lewisii</i> (Carson)	<i>Gyrineum mediocre lewisii</i> Carson	Genus not living
8–2.5 Ma	<i>Ranella lewisii</i> (Carson)	<i>Gyrineum lewisii</i> Carson	Genus not living
27–23 Ma	<i>Rapana vaquerosensis</i> (Arnold)	<i>Thais vaquerosensis</i> (Arnold)	Genus not living
27–23 Ma	<i>Rapana vaquerosensis</i> (Arnold)	<i>Rapana vaquerosensis</i> (Arnold)	Genus not living
27–17 Ma	<i>Rapana vaquerosensis imperialis</i> Hertlein and Jordan	<i>Rapana imperialis</i> Hertlein and Jordan	Genus not living
27–17 Ma	<i>Rapana vaquerosensis imperialis</i> Hertlein and Jordan	<i>Rapana vaquerosensis imperialis</i> Hertlein and Jordan	Genus not living
27–23 Ma	<i>Rhinocoryne sespeensis</i> (Loel and Corey)	<i>Potamides sespeensis</i> Loel and Corey	Genus, Gulf of California–Chile; estuaries and offshore to 27 m
27–23 Ma	<i>Rhynchopygus californicus</i> (Anderson)	<i>Cassidulus</i> (<i>Rhynchopygus</i>) <i>ynezanus</i> Kew	Genus not living, Eocene to late Oligocene or early Miocene in California
13? or 5–2.5 Ma	<i>Rimula cancellata</i> Schremp	<i>Rimula cancellata</i> Schremp	Genus, 28N in Gulf of California; 30 to 80 m
13? or 5–2.5 Ma	<i>Rissoina</i> n.sp. Powell	<i>Rissoina</i> n.sp. Powell	Genus, 28N in Gulf of California–5S; intertidal to 137 m, rocks
5 Ma–H	<i>Rocheortia tumida</i> (Carpenter)	<i>Mysella</i> (<i>Rocheortia</i>) <i>tumida</i> (Carpenter)	71.4N–32.7N, in Gulf of California; intertidal to 973 m
5 Ma–H	<i>Rocheortia tumida</i> (Carpenter)	<i>Rocheortia tumida</i> (Carpenter)	71N–33N
5 Ma–H	<i>Rocheortia tumida</i> (Carpenter)	<i>Mysella tumida</i> Carpenter	71N–33N
5 Ma–H	<i>Saccostrea palmula</i> (Carpenter) (<i>Ostrea palmula</i> in Keen, 1971, p. 84)	<i>Ostrea mexicana</i> Sowerby	25N–2S; mangrove roots or rocks, reefs, in depths to 7 m
13–8 Ma	<i>Sanguinolaria alata</i> (Gabb)	<i>Gari alata</i> Gabb	Genus, 30N–4S; intertidal
13–8 Ma	<i>Sanguinolaria alata</i> (Gabb)	<i>Sanguinolaria alata</i> Gabb	Genus, 30N–4S
27–23 Ma	<i>Sanguinolaria</i> cf. <i>S. toulai</i> Hertlein and Jordan	<i>Sanguinolaria</i> cf. <i>toulai</i> Hertlein and Jordan	Genus, 30N–4S
5 Ma–H	<i>Saxicava?</i> cf. <i>S. pholadis</i> (Linnaeus)	<i>Saxicava?</i> cf. <i>S. pholadis</i> (Linnaeus)	72N–8N. If <i>Hiatella</i> , intertidal to 390 m

27–23 Ma 5 Ma–H	<i>Saxidomus barlowi</i> Loel and Corey <i>Saxidomus giganteus</i> (Deshayes)	<i>Saxidomus barlowi</i> Loel and Corey <i>Saxidomus nuttalli</i> Conrad var. <i>giganteus</i> (Deshayes)	Genus, 60N–28N; intertidal to 36 m, in sand or mud 60N–37N; intertidal to 40 m
23 Ma–H	<i>Saxidomus nuttalli</i> Conrad	<i>Saxidomus nuttalli</i> Conrad	40.7N–27.7N; sandy areas of bays, sand, intertidal to 10 m
23 Ma–H 8–2.5 Ma N.D.	<i>Saxidomus nuttalli</i> Conrad <i>Saxidomus nuttalli latus</i> Stewart <i>Saxidomus</i> sp.	<i>Saxidomus nuttalli</i> (Conrad) <i>Saxidomus nuttalli latus</i> Stewart <i>Saxidomus</i> sp.	41N–28N Species, 41N–28N Genus, 60N–28N
27–13 Ma 27–2.5 Ma N.D.	<i>Saxidomus vaquerosensis</i> Arnold <i>Scaphander jugularis</i> (Conrad) <i>Scaphander</i> sp.	<i>Saxidomus vaquerosensis</i> Arnold <i>Scaphander jugularis</i> (Conrad) <i>Scaphander</i> sp.	Genus, 60N–28N Genus, 25N–5S; 2320 to 5200 m Genus, 25N–5S; 2320 to 5200 m
27–23 Ma	<i>Scapharca</i> (<i>Cunearca</i>) <i>hamelini</i> (Wiedey)	<i>Arca</i> (<i>Anadara</i>) <i>sespeensis</i> Wiedey	Subgenus, 28N–5S, through Gulf of California; 25 to 90 m
23–13 Ma 23–13 Ma 23–13 Ma N.D.	<i>Scapharca</i> (<i>Cunearca</i>) <i>rivulata</i> (Wiedey) <i>Scapharca</i> (<i>Cunearca</i>) <i>rivulata</i> (Wiedey) <i>Scapharca</i> (<i>Cunearca</i>) <i>rivulata</i> (Wiedey) <i>Scapharca</i> (<i>Cunearca</i>) sp.	<i>Anadara</i> (<i>Cunearca</i>) <i>rivulata</i> (Wiedey) <i>Arca rivulata</i> Wiedey <i>Arca galei</i> Wiedey <i>Cunearca</i> n.sp.	Subgenus, 29N–5S, through Gulf of California Subgenus, 28N–5S, through Gulf of California Subgenus, 28N–5S, through Gulf of California Subgenus, 28N–5S, through Gulf of California
23–8 Ma	<i>Scapharca?</i> (<i>Scapharca?</i>) <i>obispoana obispoana</i> (Conrad)	<i>Anadara</i> (<i>Scapharca</i>) <i>obispoana</i> (Conrad)	Subgenus, 30N–4S, through Gulf of California
23–8 Ma	<i>Scapharca?</i> (<i>Scapharca?</i>) <i>obispoana obispoana</i> (Conrad)	<i>Anadara obispoana</i> (Conrad)	Subgenus, 30N–4S, through Gulf of California
23–8 Ma	<i>Scapharca?</i> (<i>Scapharca?</i>) <i>obispoana obispoana</i> (Conrad)	<i>Arca</i> (<i>Anadara</i>) <i>obispoana</i> Conrad	Subgenus, 30N–4S, through Gulf of California
17–13 Ma N.D.	<i>Scapharca?</i> (<i>Scapharca?</i>) <i>obispoana perdisparis</i> (Wiedey) <i>Schizaster?</i> sp. (Edhinodermata)	<i>Arca perdisparis</i> Wiedey <i>Schizaster?</i> n.sp. (Echinodermata)	Subgenus, 30N–4S, through Gulf of California See discussion in Grant and Hertlein (1938, p. 119–121)
5–2.5 Ma	<i>Scutellaster interlineata</i> (Stimpson) (Echinodermata)	<i>Scutella interlineata</i> Stimpson	Genus not living
5–2.5 Ma 5–2.5 Ma 8–2.5 Ma 8–2.5 Ma 5–2.5 Ma 5–2.5 Ma N.D.	<i>Scutellaster interlineata</i> (Stimpson) <i>Scutellaster interlineata</i> (Stimpson) <i>Scutellaster oregonensis</i> (Clark) <i>Scutellaster oregonensis</i> (Clark) <i>Scutellaster oregonensis major</i> Kew <i>Scutellaster oregonensis major</i> Kew <i>Scutellaster</i> sp.	<i>Scutellaster interlineata</i> (Stimpson) <i>Scutellaster interlineata</i> (Stimpson) <i>Anorthoscutum oregonense</i> Grant and Hertlein <i>Scutellaster oregonensis</i> (Clark) <i>Echinarachnius</i> cf. <i>E. interstriata</i> Blake <i>Scutellaster major</i> (Kew) <i>Scutella</i> sp.	Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living Genus not living
5–2.5 Ma N.D.	<i>Searlesia diegoensis</i> Dall <i>Searlesia</i> sp.	<i>Searlesia diegoensis</i> Dall <i>Searlesia</i> n.sp. (large)	Genus 56N–37N Genus, 56N–37N, intertidal, rocky area along open coast
5 Ma–H N.D.	<i>Seila assimilata</i> (Adams) <i>Selia</i> n.sp. Powell	<i>Seila montereyensis</i> Bartsch <i>Selia</i> n.sp. Powell	37N–8N, through Gulf of California; intertidal to 119 m Genus, 37N–8N, through Gulf of California; intertidal to 119 m
5 Ma–H 5–2.5 Ma 8–5 Ma 8–2.5 Ma 13 Ma–H 23–13 Ma 8 Ma–H	<i>Semele flavescens</i> (Gould) <i>Semele ashleyi</i> Hertlein <i>Semele</i> cf. <i>S. sylviaensis</i> Weaver <i>Semele fausta</i> Nomland <i>Semele formosa</i> (Sowerby) <i>Semele morani</i> Anderson and Martin? <i>Semele rubropicta</i> Dall	<i>Semele flavescens</i> (Gould) <i>Semele ashleyi</i> Hertlein <i>Semele</i> cf. <i>S. sylviaensis</i> Weaver <i>Semele fausta</i> Nomland <i>Semele formosa</i> Sowerby <i>Semele?</i> sp. <i>Semele rubropicta</i> Dall	30N–2S; intertidal Genus, 60N–3S; intertidal to 92 m Genus, 60N–3S Genus, 60N–3S 31N in Gulf of California–2S Genus, 60N–3S 60N–28N, intertidal to 100 m, beaches of clean gravel, sheltered Genus, 60N–3S
13? or 5–2.5? Ma N.D.	<i>Semele sayi</i> Toulia <i>Semele</i> sp.	<i>Semele sayi</i> Toulia <i>Semele</i> sp.	Genus, 60N–3S Subgenus, 40N–5S; intertidal, attached to rocks by a byssus
17–13 Ma	<i>Septifer</i> (<i>Septifer</i>) <i>coalingensis</i> Arnold	<i>Septifer coalingensis</i> Arnold	

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
5 Ma–H	<i>Septifer bifurcatus</i> Conrad	<i>Septifer bifurcatus</i> Conrad	36.6N–22.9N; intertidal, attached to rocks by a byssus, to 50 m
N.D.	<i>Septifer</i> sp.	<i>Septifer</i> sp.	Questionable taxonomic assignment
8 Ma–H	<i>Serpulorbis squamigerus</i> (Carpenter)	<i>Aletes squamigerus</i> Carpenter	55N–1S; on rocks in protected areas
5 Ma–H	<i>Serripes groenlandicus</i> (Brugiere)	<i>Serripes gröenlandicus</i> Becks	71.4N–48N; intertidal to 80 m
13? or 5 Ma–H	<i>Siderastrea californica</i> Vaughan	<i>Siderastrea californica</i> Vaughan (Cnidaria)	“Reef-corals,” present-day taxa living in Atlantic
13? or 5 Ma–H	<i>Siderastrea mendenhalli minor</i> Vaughan	<i>Siderastrea mendenhalli minor</i> Vaughan	“Reef-corals,” present-day taxa living in Atlantic
13? or 5 Ma–H	<i>Siderastrea mendenhalli</i> Vaughan	<i>Siderastrea mendenhalli</i> Vaughan	“Reef-corals,” present-day taxa living in Atlantic
N.D.	<i>Siderastrea</i> sp.	<i>Siderastrea</i> sp.	“Reef-corals,” present-day taxa living in Atlantic
8 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) cf. <i>S. (S.) alta</i> (Broderip and Sowerby)	<i>Siliqua</i> cf. <i>S. alta</i> (Broderip and Sowerby)	72N–35.4N; intertidal to 85 m
8 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) cf. <i>S. (S.) alta</i> (Broderip and Sowerby)	<i>Siliqua</i> cf. <i>S. media</i> (Sowerby)	72N–35N
13 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>lucida</i> (Conrad)	<i>Siliqua lucida</i> Conrad	38.3N–25.3N; intertidal to 50 m, sand beaches and bays
13 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>lucida</i> (Conrad)	<i>Siliqua lucida</i> (Conrad)	38N–25N
23 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>patula</i> (Dixon)	<i>Siliqua nuttalli</i> Conrad	59.2N–35.4N; intertidal to 55 m, open sandy, surf- swept beaches
23 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>patula</i> (Dixon)	<i>Siliqua oregonia</i> Dall	59N–35N
23 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>patula</i> (Dixon)	<i>Siliqua patula</i> (Dixon)	59N–35N
23 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>patula</i> (Dixon)	<i>Solemya (Acharax) ventricosa</i> Conrad	59N–35N
23 Ma–H	<i>Siliqua</i> (<i>Siliqua</i>) <i>patula</i> (Dixon)	<i>Solemya ventricosa</i> Conrad	59N–35N
N.D.	<i>Siliqua</i> sp.	<i>Siliqua</i> sp.	Genus, 72N–25N; intertidal to 55 m, sandy, surf-swept beaches
8 Ma–H	<i>Simomactra</i> cf. <i>S. dolabriformis</i> (Conrad)	<i>Mactra</i> cf. <i>M. dolabriformis</i> (Conrad)	33N–9N; intertidal to 10 m
5 Ma–H	<i>Simomactra</i> cf. <i>S. planulata</i> (Conrad)	<i>Spisula</i> (<i>Spisula</i>) cf. <i>S. (S.) planulata</i> Conrad	38N–27.9N; intertidal to 95 m
5 Ma–H	<i>Simomactra</i> cf. <i>S. planulata</i> (Conrad)	<i>Spisula</i> (<i>Mactromeris</i>) cf. <i>S. (M.) planulata</i> Conrad	38N–28N
5 Ma–H	<i>Simomactra falcata</i> (Gould)	<i>Mactra falcata</i> Gould	54.2N–30.5N; intertidal to 50 m
13 Ma–H	<i>Simomactra falcata</i> (Gould)	<i>Spisula falcata</i> Gould	54N–31N
13 Ma–H	<i>Simomactra falcata</i> (Gould)	<i>Spisula</i> (<i>Spisula</i>) <i>falcata</i> (Gould)	54N–31N
13–8 Ma	<i>Simomactra falcata brioniana</i> Trask	<i>Spisula falcata brioniana</i> Trask	Species, 54N–31N
13–8 Ma	<i>Simomactra falcata brioniana</i> Trask	<i>Spisula</i> (<i>Spisula</i>) <i>falcata brioniana</i> Trask	Species, 54N–31N
5 Ma–H	<i>Sinum debile</i> Gould	<i>Sinum debile</i> Gould	34N–3N; on tide flats and offshore to depths of 48 m
27 Ma–H	<i>Sinum scopulosum</i> (Conrad)	<i>Sigaretus perrini</i> Arnold	37N–32N; shallow bays, sandy substrate offshore
27 Ma–H	<i>Sinum scopulosum</i> (Conrad)	<i>Sigaretus scopulosum</i> Conrad	37N–32N
27 Ma–H	<i>Sinum scopulosum</i> (Conrad)	<i>Sinum</i> (<i>Sigaretus</i>) <i>trigenarium</i> Trask	37N–32N
27 Ma–H	<i>Sinum scopulosum</i> (Conrad)	<i>Sinum perrini</i> Arnold	37N–32N
27 Ma–H	<i>Sinum scopulosum</i> (Conrad)	<i>Sinum scopulosum</i> (Conrad)	37N–32N
27 Ma–H	<i>Sinum scopulosum</i> (Conrad)	<i>Sinum trigenarium</i> Trask	37N–32N
N.D.	<i>Sinum</i> sp.	<i>Sinum</i> sp.	Genus, 37N–Chile; intertidal to 170 m, on sand or mud
8 Ma–H	<i>Solamen columbianum</i> (Dall)	<i>Megacrenella columbiana</i> (Dall)	52N–32.7N; 20 to 500 m or 29 to 530 m
8 Ma–H	<i>Solamen columbianum</i> (Dall)	<i>Crenella columbiana</i> Dall	52N–33N
13 M–Ha	<i>Solariella peramabilis</i> Carpenter	<i>Solariella peramabilis</i> Carpenter	55N–23N; >180 m through Gulf of California
N.D.	<i>Solariella</i> sp.	<i>Solariella</i> n.sp.?	Genus, 72N–0, through Gulf of California

13–2.5? Ma	<i>Solec curtus borggii gatumensis</i> Toul	<i>Solec curtus borggii gatumensis</i> Toul	Genus, 28N–4S; 37 m to 110 m
27–13 Ma	<i>Solec curtus gabbianus</i> (Anderson and Martin)	<i>Solec curtus gabbianus</i> (Anderson and Martin)	Genus, 28N–4S
27–13 Ma	<i>Solec curtus gabbianus</i> (Anderson and Martin)	<i>Poromya gabbiana</i> Anderson and Martin	Genus, 28N–4S
27–13 Ma	<i>Solec curtus gabbianus</i> (Anderson and Martin)	<i>Psamosolen gabbiana</i> (Anderson and Martin)	Genus, 28N–4S
5 Ma–H	<i>Solen (Ensisolen) cf. S. (E.) rostriformis</i> Dunker	<i>Solen cf. S. rasaculus</i> Carpenter	35.4N–23.2N; intertidal to 50 m
5 Ma–H	<i>Solen (Ensisolen) cf. S. (E.) rostriformis</i> Dunker	<i>Solen cf. S. rosaceus</i> Carpenter	35N–23N
5 Ma–H	<i>Solen (Ensisolen) rostriformis</i> Dunker	<i>Solen rosaceus</i> Carpenter	35.4N–23.2 N; intertidal to 50 m; also in sandy areas of bays
13 Ma–H	<i>Solen (Ensisolen) sicarius</i> Gould	<i>Solena sicarius</i> Gould	54N–30.4N; intertidal, bays
13 Ma–H	<i>Solen (Ensisolen) sicarius</i> Gould	<i>Solen sicarius</i> Gould	54N–30N
23–17 Ma	<i>Solen conradi</i> Dall	<i>Solen conradi</i> Dall	Genus, 72N–2S; intertidal to 72 m
23–13 Ma	<i>Solen curtis</i> Conrad	<i>Solen curtis</i> Conrad	Genus, 72N–2S
27–23 Ma	<i>Solen gravidus baileyi</i> Loel and Corey	<i>Solen gravidus baileyi</i> Loel and Corey	Genus, 72N–2S
27–23 Ma	<i>Solen gravidus baileyi</i> Loel and Corey	<i>Solen gravidus?</i> Clark	Genus, 72N–2S
27–23 Ma	<i>Solen gravidus baileyi</i> Loel and Corey	<i>Solen gravidus</i> (Clark) <i>baileyi</i> Loel and Corey	Genus, 72N–2S
23–13 Ma	<i>Solen gravidus</i> Clark	<i>Solena grvida</i> (Clark)	Genus, 72N–2S
23–13 Ma	<i>Solen gravidus</i> Clark	<i>Solen gravidus</i> Clark	Genus, 72N–2S
17–2.5 Ma	<i>Solen perrini</i> Clark	<i>Solen sicarius</i> Gould (cf. var. <i>perrini</i> Clark)	Genus, 72N–2S
17–2.5 Ma	<i>Solen perrini</i> Clark	<i>Solen perrini</i> Clark	Genus, 72N–2S
N.D.	<i>Solen sp.</i>	<i>Solen sp.</i>	Genus, 72N–2S
13? or 5–2.5 Ma	<i>Solenastrea fairbanksi minor</i> Vaughan (Cnidaria)	<i>Solenastrea fairbanksi minor</i> Vaughan (Cnidaria)	“Reef-corals,” present-day taxa living in Atlantic
13? or 5–2.5 Ma	<i>Solenastrea fairbanksi</i> (Vaughan)	<i>Solenastrea fairbanksi</i> (Vaughan)	“Reef-corals,” present-day taxa living in Atlantic
13? or 5–2.5 Ma	<i>Solenastrea fairbanksi columaris</i> (Vaughan)	<i>Solenastrea fairbanksi columaris</i> (Vaughan)	“Reef-corals,” present-day taxa living in Atlantic
13? or 5–2.5 Ma	<i>Solenastrea fairbanksi normalis</i> Vaughan	<i>Solenastrea fairbanksi normalis</i> Vaughan	“Reef-corals,” present-day taxa living in Atlantic
13? or 5 Ma–H	<i>Solenosteira anomala</i> (Reeve)	<i>Solenosteira anomala</i> (Reeve)	28N–5S
27–23 Ma	<i>Solenosteira merriami</i> (Anderson and Martin)	<i>Solenosteira merriami</i> Loel and Corey	Genus, 28N–5S; intertidal to 46 m
13? or 5 M–Ha	<i>Solenosteria anomala</i> (Reeve)	<i>Solenosteria anomala</i> Reeve	28N–5S; intertidal to 73 m
N.D.	<i>Solenosteria sp.</i>	<i>Solenosteria sp.</i>	Genus, 28N–5S
5 Ma–H	<i>Solidobalanus (Hesperibalanus) hesperius hesperius</i> (Pilsbry) (Arthropoda)	<i>Balanus (Hesperibalanus) hesperius</i> Pilsbry (Arthropoda)	65N–48N; 60 to 180 m
5–2.5 Ma	<i>Solidobalanus (Hesperibalanus) proinus</i> (Woodring)	<i>Balanus hesperius proinus</i> Woodring	Not living
5–2.5 Ma	<i>Spatangus rarus</i> Israelsky (Echinodermata)	<i>Spatangus rarus</i> Israelsky (Echinodermata)	Genus, 37N–28N
13 or 8 Ma–H	<i>Spathochlamys vestalis</i> (Reeve)	<i>Chlamys lowei</i> (Hertlein)	33.4N–1.3S
N.D.	<i>Sphaerium sp.</i>	<i>Sphaerium sp.</i>	Fresh and brackish water
5 Ma–H	<i>Sphaerium striatium</i> (Lamarck)	<i>Sphaerium?</i> sp.	Fresh and brackish water
5 Ma–H	<i>Sphaerium striatium</i> (Lamarck)	<i>Sphaerium cooperi</i> Arnold	Fresh and brackish water
8 Ma–H	<i>Sphenia laticola</i> (Valenciennes)	<i>Sphenia laticola</i> (Valenciennes)	40N–4S; intertidal to 64 m, nestling in cavities
5 Ma–H	<i>Spiroglyphus lituellus</i> (Mörch)	<i>Spiroglyphus lituellus</i> (Mörch)	55N–33N
23–17 Ma	<i>Spirotropis calodius</i> Moore	<i>Spirotropis calodius</i> Moore	Genus, 37N–3S, common in deep water, e.g., 733 to 2323 m
23–17 Ma	<i>Spirotropis washingtonensis</i> Etherington	<i>Spirotropis washingtonensis</i> Etherington	Genus, 37N–3S
N.D.	<i>Spisula sp. (Mactromeris or Simomactra)</i>	<i>Spisula sp.</i>	Genus, 71N–4S or N.D.
N.D.	<i>Spisula sp. (Mactromeris or Simomactra)</i>	<i>Spisula sp.</i>	Genus, 71N–4S or N.D.
13? or 5 Ma–H	<i>Spondylus bostryches</i> Guppy	<i>Spondylus bostrychites</i> Guppy	31N–5S; 7 to 30 m
13 Ma–H	<i>Spondylus calcifer</i> Carpenter	<i>Spondylus calcifer</i> Carpenter	31N–5S; can be 15 cm across and weigh more than 1 kg
8–5 Ma	<i>Spondylus crasiquama</i> Jordan and Hertlein	<i>Spondylus crasiquama</i> Jordan and Hertlein	Genus, 31N–5S
27–23 Ma	<i>Spondylus perrini</i> Wiedey	<i>Spondylus perrini</i> Wiedey	Genus, 31N–5S
23–17 Ma	<i>Spondylus scotti</i> Brown and Pilsbry	<i>Spondylus scotti</i> Brown and Pilsbry	Genus, 31N–5S, Pacific; 35N–15N, Atlantic
N.D.	<i>Spondylus sp.</i>	<i>Spondylus sp.</i>	Genus, 31N–5S
13–8 Ma	<i>Spondylus sp. aff. S. ursipes</i> Berry (Smith, 1989)	<i>Spondylus sp. aff. S. ursipes</i> Berry	29N Gulf of California
13 Ma–H	<i>Spondylus victoriae</i> Sowerby	<i>Spondylus victoriae</i> Sowerby (fide Durham, 1950b)	30N–26N. (Keen, 1971, p. 96–97) not listed as living
8 Ma–H	<i>Strictispira cf. S. ericana</i> (Hertlein and Strong)	<i>Crassispira n.sp.? cf. C. ericana</i> Hertlein and Strong	31N in Gulf of California–3S; intertidal and “offshore”

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23–8 Ma	<i>Striostrea? bourgeoisii bourgeoisii</i> (Rémond)	<i>Ostrea bourgeoisii</i> Rémond	Genus, 24N–4S
27–13 Ma	<i>Striostrea? freudenbergi</i> (Hertlein and Jordan)	<i>Crassostrea freudenbergi</i> Hertlein and Jordan?	Genus, 24N–4S
27–13 Ma	<i>Striostrea? freudenbergi</i> (Hertlein and Jordan)	<i>Ostrea freudenbergi</i> Hertlein and Jordan	Genus, 24N–4S
27–13 or 8? Ma	<i>Striostrea? subtitian</i> (Loel and Corey)	<i>Crassostrea titan subtitian</i> (Loel and Corey)	Genus, 24N–4S
27–13 or 8? Ma	<i>Striostrea? subtitian</i> (Loel and Corey)	<i>Ostrea titan</i> (Conrad) <i>subtitian</i> Loel and Corey	Genus, 24N–4S
27–13 or 8? Ma	<i>Striostrea? subtitian</i> (Loel and Corey)	<i>Ostrea titan</i> (Conrad) <i>subtitian?</i> Loel and Corey	Genus, 24N–4S
27–13 or 8? Ma	<i>Striostrea? subtitian</i> (Loel and Corey)	<i>Ostrea titan</i> cf. <i>O. subtitian</i> Loel and Corey	Genus, 24N–4S
27–13 or 8? Ma	<i>Striostrea? subtitian</i> (Loel and Corey)	<i>Ostrea titan</i> Conrad	Genus, 24N–4S
27–13 or 8? Ma	<i>Striostrea? subtitian</i> (Loel and Corey)	<i>Ostrea titan</i> Conrad n. var.	Genus, 24N–4S
23 Ma–H	<i>Strombina</i> (<i>Strombina</i>) cf. <i>S. (S.) maculosa</i> (Sowerby)	<i>Turricula</i> cf. <i>T. maculosa</i> (Sowerby)	Northern Gulf of California–8N, mudflats to 37 m
23–13 Ma	<i>Strombina carlosensis</i> Durham	<i>Strombina carlosensis</i> Durham?	Genus, 28N–5S, through Gulf of California; extreme low tide to 100 m
N.D.	<i>Strombina</i> sp.	<i>Strombina</i> sp.	Genus, 28N–5S, through Gulf of California
13 Ma–H	<i>Strombus</i> (<i>Strombus</i>) <i>gracilior</i> Sowerby	<i>Strombus gracilior</i> Sowerby	Gulf of California–5S; sandflats, lagoons, and offshore to 45 m
13 Ma–H	<i>Strombus</i> (<i>Tricomis</i>) <i>galeatus</i> Swainson	<i>Strombus galeatus</i> Swainson	Northern end of Gulf of California–3S; just below low- tide line
17 Ma–H	<i>Strombus</i> cf. <i>S. gatunensis</i> Toulà	<i>Strombus</i> cf. <i>S. gatunensis</i> Toulà	Northern end Gulf of California–5S; beaches, low-tide to 75 m
13 Ma–H	<i>Strombus granulatus</i> Swainson	<i>Strombus granulatus</i> Mawe	Northern end Gulf of California–3S; beaches, rock, sand, and to 75 m
5–2.5 Ma	<i>Strombus granulatus</i> Swainson <i>acutus</i> Durham	<i>Strombus</i> cf. <i>gran acutus</i> Mawe	Species, northern end Gulf of California–3S
13–8 Ma	<i>Strombus obliteratus</i> Hanna	<i>Strombus obliteratus</i> Hanna	Genus, northern end Gulf of California–5S
N.D.	<i>Strombus</i> sp.	<i>Strombus</i> sp.	Genus, northern end Gulf of California–5S
5 Ma–H	<i>Strongylocentrotus franciscanus</i> (A. Agassiz) (Echinodermata)	<i>Strongylocentrotus franciscanus</i> A. Agassiz (Echinodermata)	57N–28N; singly in deep pools and channels.
5 Ma–H	<i>Strongylocentrotus purpuratus</i> (Stimpson)	<i>Strongylocentrotus purpuratus</i> Stimpson	57N–28N; bores shallow, cuplike depressions in soft rock
N.D.	<i>Strongylocentrotus</i> sp.	<i>Strongylocentrotus</i> sp.	Genus, 57N–28N
17–13 Ma	<i>Sulcoretusa? israelskyi</i> Addicott	<i>Sulcoretusa? israelskyi</i> Addicott	Genus, 24N–0; 28N in Gulf–24N; 18 to 34 m
N.D.	<i>Swiftopecten</i> n.sp. Genus, 13? or 8–1.6 Ma	<i>Swiftopecten</i> n.sp.	If <i>Swiftopecten</i> , genus reported living (Moore, 1984, p. B.59)
8–1.6 Ma	<i>Swiftopecten parmeleei etchegoini</i> (Anderson) 8–1.6 Ma	<i>Chlamys</i> (<i>Swiftopecten</i>) <i>wattsii</i> var. <i>morani</i> (Arnold)	Genus reported living (Moore, 1984, p. B59), no range given
8–1.6 Ma	<i>Swiftopecten parmeleei etchegoini</i> (Anderson) 8–1.6 Ma	<i>Chlamys etchegoini</i> (Anderson)	Genus reported living (Moore, 1984, p. B59), no range given
8–1.6 Ma	<i>Swiftopecten parmeleei etchegoini</i> (Anderson) 8–1.6 Ma	<i>Chlamys parmeleei ethegoini</i> (Anderson)	Genus reported living (Moore, 1984, p. B59), no range given
8–1.6 Ma	<i>Swiftopecten parmeleei etchegoini</i> (Anderson) 8–1.6 Ma	<i>Pecten</i> (<i>Pallium</i>) <i>swifitii bernardi</i> var. <i>etchegoini</i> Anderson	Genus reported living (Moore, 1984, p. B59), no range given
8–1.6 Ma	<i>Swiftopecten parmeleei etchegoini</i> (Anderson) 8–1.6 Ma	<i>Pecten</i> (<i>Swiftopecten</i>) <i>etchegoini</i> Anderson subsp. <i>wattsii</i> Arnold	Genus reported living (Moore, 1984, p. B59), no range given
8–1.6 Ma	<i>Swiftopecten parmeleei etchegoini</i> (Anderson) 8–1.6 Ma	<i>Swiftopecten etchegoini</i> (Anderson)	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Chlamys</i> (<i>Swiftopecten</i>) <i>parmaleei</i> Dall	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Chlamys parmaleei</i> (Dall)	Genus reported living (Moore, 1984, p. B59), no range given

13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Chlamys swiftii parmaleei</i> (Dall)	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Pecten parmaleei</i> Dall	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Pecten wattsi</i> Arnold	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Swiftopecten parmaleei parmaleei</i> (Dall)	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Swiftopecten swiftii parmaleei</i> (Dall)	Genus reported living (Moore, 1984, p. B59), no range given
13? or 8–2.5 Ma	<i>Swiftopecten parmeleei parmaleei</i> (Dall) 13? or 8–2.5 Ma	<i>Swiftopecten wattsi</i> (Arnold)	Genus reported living (Moore, 1984, p. B59), no range given
N.D.	<i>Swiftopecten</i> sp.	<i>Pecten</i> (<i>Swiftopecten</i>) sp. ident.	Genus reported living (Moore, 1984, p. B59), no range given
N.D.	<i>Syntomodrillia</i> n.sp. Powell	<i>Syntomodrillia</i> n.sp. Powell	Genus, 8N; 5 to 10 m
5 Ma–H	<i>Tachyrhynchus major</i> Dall	<i>Tachyrhynchus erosus</i> forma <i>major</i> Dall	72N–55N; genus, 20 to 300 m
13–8 Ma	<i>Tagelus</i> (<i>Mesopleura</i>) <i>peruvianus</i> Pilsbry and Olsson	<i>Tagelus</i> (<i>Mesopleura</i>) <i>peruvianus</i> Pilsbry and Olsson	35N–5S; intertidal, in sand or mud
5 Ma–H	<i>Tagelus</i> (<i>Mesopleura</i>) <i>subteres</i> (Conrad)?	<i>Tagelus subteres</i> (Conrad)?	35.4N–26.8N; intertidal, bays
5 Ma–H	<i>Tagelus</i> (<i>Mesopleura</i>) <i>subteres</i> (Conrad)?	<i>Tagelus</i> (<i>Tagelus</i>) <i>subteres</i> (Conrad)?	35–27N
13 Ma–H	<i>Tagelus</i> (<i>Tagelus</i>) <i>californianus</i> (Conrad)	<i>Tagelus</i> (<i>Tagelus</i>) <i>californianus</i> (Conrad)	40.7N–10.8N; intertidal, sandy mudflats of bays
13 Ma–H	<i>Tagelus</i> (<i>Tagelus</i>) <i>californianus</i> (Conrad)	<i>Tagelus californianus</i> (Conrad)	41N–11N
13 Ma–H	<i>Tagelus</i> (<i>Tagelus</i>) <i>californianus</i> (Conrad)	<i>Tagelus californianus</i> Conrad	41N–11N
27–13 Ma	<i>Tagelus clarki</i> Loel and Corey	<i>Tagelus clarki</i> Loel and Corey	Genus, 43N–43S; intertidal to 5 m, bays
27–13 Ma	<i>Tagelus clarki</i> Loel and Corey	<i>Tagelus clarki</i> ? Loel and Corey	Genus, 43N–43S
N.D.	<i>Tagelus</i> sp.	<i>Tagelus</i> sp.	Genus, 43N–43S
8–2.5 Ma	<i>Taranis incultus</i> (Moody)	<i>Borsonia inculta</i> Moody	Genus, 55N–33N; 180 m
8–2.5 Ma	<i>Taranis incultus</i> (Moody)	<i>Taranis incultus</i> (Moody)	Genus, 55N–33N
N.D.	<i>Taranis</i> sp.	<i>Borsonia</i> sp.	Genus, 55N–33N
5–2.5 Ma	<i>Taranis strongi</i> (Arnold)	<i>Taranis strongi</i> (Arnold)	55N–33N; 180 m
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> Arnold	<i>Chlorostoma</i> (<i>Omphalius</i>) <i>dalli</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N; intertidal
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> Arnold	<i>Tegula dalli</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> Arnold	<i>Chlorostoma dalli</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
17–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>arnoldi</i> Addicott	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>inornatus</i> Arnold	<i>Tegula</i> (<i>Omphalius</i>) <i>dalli</i> <i>arnoldi</i> Addicott	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>inornatus</i> Arnold	<i>Chlorostoma</i> (<i>Omphalius</i>) <i>dalli</i> <i>inornatus</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>inornatus</i> Arnold	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>inornatus</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>subnodosus</i> Arnold	<i>Chlorostoma</i> (<i>Omphalius</i>) <i>dalli</i> <i>subnodosus</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>subnodosus</i> Arnold	<i>Tegula</i> (<i>Chlorostoma</i>) <i>dalli</i> <i>subnodosus</i> Arnold	Subgenus, 34N–17N, head of Gulf of California–28N
13–8 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>danvillensis</i> Clark	<i>Tegula</i> (<i>Chlorostoma</i>) <i>danvillensis</i> Clark	Subgenus, 34N–17N, head of Gulf of California–28N
17–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>laevis</i> Addicott	<i>Tegula</i> (<i>Omphalius</i>) <i>laevis</i> Addicott	Subgenus, 34N–17N, head of Gulf of California–28N
27–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>malibuensis</i> Loel and Corey	<i>Tegula</i> (<i>Omphalius</i>) <i>laevis</i> Addicott	Subgenus, 34N–17N, head of Gulf of California–28N
27–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>malibuensis</i> Loel and Corey	<i>Tegula malibuensis</i> Loel and Corey	Subgenus, 34N–17N, head of Gulf of California–28N
27–13 Ma	<i>Tegula</i> (<i>Chlorostoma</i>) <i>malibuensis</i> Loel and Corey	<i>Tegula</i> (<i>Chlorostoma</i>) <i>malibuensis</i> Loel and Corey	Subgenus, 34N–17N, head of Gulf of California–28N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
13–8 Ma	<i>Tegula (Chlorostoma) nashae</i> Clark	<i>Tegula (Chlorostoma) nashi</i> Clark	Subgenus, 34N–17N, head of Gulf of California–28N
23–13 Ma	<i>Tegula (Chlorostoma) pacifica</i> (Anderson and Martin)	<i>Chlorostoma pacificum</i> (Anderson and Martin)	Subgenus, 34N–17N, head of Gulf of California–28N
5 Ma–H	<i>Tegula</i> aff. <i>T. aureotincta</i> (Forbes)	<i>Tegula</i> aff. <i>T. aureotincta</i> (Forbes)	34N–24N
5 Ma–H	<i>Tegula</i> cf. <i>T. funebris</i> (Adams)	<i>Tegula</i> cf. <i>T. funebris</i> (Adams)	48N–28N; strictly intertidal
5 Ma–H	<i>Tegula funebris</i> (Adams)	<i>Tegula funebris</i> (A. Adams)	48N–28N
13? or 8 Ma–H	<i>Tegula gallina</i> (Forbes)	<i>Tegula gallina</i> (Forbes)	38N–23N; midtidal zone
8–5 Ma	<i>Tegula lahondaensis</i> (Arnold)	<i>Tegula lahondaensis</i> (Arnold)	Genus, 57N–5S; intertidal to 28 m, on rocks and algae
8 Ma–H	<i>Tegula ligulata</i> (Menke)	<i>Tegula ligulata</i> (Menke)	37N–17N
5 Ma–H	<i>Tegula montereyi</i> (Fischer)	<i>Tegula montereyi</i> (Fischer)	38N–34N
5 Ma–H	<i>Tegula regina</i> (Stearns)	<i>Tegula regina</i> (Stearns)	34N–24N; sublittoral, >10 m
N.D.	<i>Tegula</i> sp.	<i>Tegula</i> sp.	Genus, 57N–5S
13–8 Ma	<i>Tegula thea</i> Nomland	<i>Tegula (Chlorostoma) thea</i> Nomland	Genus, 57N–5S
13–8 Ma	<i>Tegula thea</i> Nomland	<i>Tegula thea</i> Nomland	Genus, 57N–5S
13–5 Ma	<i>Tegula varistriata</i> Nomland	<i>Tegula (Chlorostoma) varistriata</i> Nomland	Genus, 57N–5S
13–5 Ma	<i>Tegula varistriata</i> Nomland	<i>Tegula varistriata</i> Nomland	Genus, 57N–5S
5–2.5 Ma	<i>Tegula?</i> cf. <i>T. dubiosa</i> Grant and Gale	<i>Tegula?</i> cf. <i>T. dubiosa</i> Grant and Gale	Genus, 57N–5S
5 Ma–H	<i>Teinostoma</i> cf. <i>T. supravallataum</i> (Carpenter)	<i>Pseudorotella?</i> cf. <i>P. supravallata</i> (Carpenter)	37N–through Gulf of California; genus, intertidal to 64 m
23 Ma–H	<i>Tellina (Angulus)</i> aff. <i>T. (A.) modesta</i> (Carpenter)	<i>Tellina</i> aff. <i>T. buttoni</i> Dall	60N–28N; sandy substrate, to depths of 64 m
5 Ma–H	<i>Tellina (Angulus) carpenteri</i> Dall	<i>Tellina (Moerella) carpenteri</i> Dall	57.1N–7.2N; bays and sandy substrate; intertidal to 305 m
23 Ma–H	<i>Tellina (Angulus) modesta</i> (Carpenter)	<i>Tellina (Oudardia) modesta</i> Carpenter	59.2N–27.7N; sandy substrate, intertidal to 100 m
23 Ma–H	<i>Tellina (Angulus) modesta</i> (Carpenter)	<i>Tellina (Angulus) buttoni</i> Dall ?	59N–28N
8 Ma–H	<i>Tellina (Megangulus)</i> cf. <i>T. (M.) lutea</i> Wood	<i>Tellina (Peronidea)</i> cf. <i>T. (P.) lutea</i> Wood	72N–56.5N, intertidal to 100 m
8 Ma–H	<i>Tellina (Megangulus)</i> cf. <i>T. (M.) lutea</i> Wood	<i>Tellina</i> cf. <i>T. lutea</i> Wood	72N–57N
17? or 8 Ma–H	<i>Tellina (Peronidia) bodegensis</i> Hinds	<i>Tellina (Peronidia) bodegensis</i> Hinds	57.1N–24.6N; sandflats in bays, sandy substrate, intertidal to 100 m
17? or 8 Ma–H	<i>Tellina (Peronidia) bodegensis</i> Hinds	<i>Tellina bodegensis</i> Hinds	57N–25N
23 Ma–H	<i>Tellina (Tellinella) idae</i> Dall	<i>Tellina idae</i> Dall	34.4N–32.7N; intertidal to 100 m
23 Ma–H	<i>Tellina (Tellinella) idae</i> Dall	<i>Tellina (Tellinella) idae</i> Dall	34N–33N
17 Ma–H	<i>Tellina</i> aff. <i>T. radiata radiata</i> Linnaeus	<i>Tellina</i> aff. <i>T. radiata</i> Linnaeus	29N–15N, Atlantic, Caribbean, and Gulf of Mexico
8–5 Ma	<i>Tellina</i> cf. <i>T. aragonia</i> Dall	<i>Tellina</i> cf. <i>T. aragonia</i> Dall	Genus, 72N–5S; intertidal to 305 m
17–8 Ma	<i>Tellina congesta</i> Conrad	<i>Macoma congesta</i> Conrad	Genus, 72N–5S
17–8 Ma	<i>Tellina congesta</i> Conrad	<i>Tellina congesta</i> Conrad	Genus, 72N–5S
13–8 Ma	<i>Tellina diabloensis</i> Clark	<i>Tellina diabloensis</i> Clark	Genus, 72N–5S
23–17 Ma	<i>Tellina emacerata</i> Conrad	<i>Tellina emacerata</i> Conrad	Genus, 72N–5S
13–8 Ma	<i>Tellina englishi</i> Clark	<i>Tellina englishi</i> Clark	Genus, 72N–5S
13–8 Ma	<i>Tellina hannibali</i> Clark	<i>Tellina hannibali</i> Clark	Genus, 72N–5S
23–17 Ma	<i>Tellina insurana</i> G. D. Hanna	<i>Tellina tenuistriata</i> Davis	Genus, 72N–5S
13 Ma–H	<i>Tellina nuculoides</i> (Reeve)	<i>Tellina salmonea</i> Carpenter	60N–32N; intertidal to 100 m
13 Ma–H	<i>Tellina nuculoides</i> (Reeve)	<i>Tellina (Cadella) salmonea</i> Carpenter	60N–32N
27–8 Ma	<i>Tellina ocoyana</i> Conrad	<i>Tellina nevadensis</i> Anderson and Martin	Genus, 72N–5S
27–8 Ma	<i>Tellina ocoyana</i> Conrad	<i>Macoma ocoyana</i> Conrad	Genus, 72N–5S
27–8 Ma	<i>Tellina ocoyana</i> Conrad (common 23–17 Ma)	<i>Tellina ocoyana</i> Conrad	Genus, 72N–5S

23–13 Ma	<i>Tellina oldroydi</i> Wiedey	<i>Tellina (Peronidia) oldroydi</i> Wiedey	Genus, 72N–5S
23–13 Ma	<i>Tellina oldroydi</i> Wiedey	<i>Tellina oldroydi</i> Wiedey	Genus, 72N–5S
17? or 13–8 Ma	<i>Tellina oregonensis</i> Conrad	<i>Tellina oregonensis</i> Conrad	Genus, 72N–5S
17? or 13–8 Ma	<i>Tellina oregonensis?</i> Conrad	<i>Tellina oregonensis?</i> Conrad	Genus, 72N–5S
N.D.	<i>Tellina</i> sp.	<i>Tellina</i> sp.	Genus, 72N–5S
23–8 Ma	<i>Tellina wilsoni</i> Anderson and Martin	<i>Macoma wilsoni</i> (Anderson and Martin)	Genus, 72N–5S
23–8 Ma	<i>Tellina wilsoni</i> Anderson and Martin	<i>Tellina wilsoni</i> Anderson and Martin	Genus, 72N–5S
8–2.5 Ma	<i>Tellina woodringi</i> Adegoke	<i>Tellina woodringi</i> Adegoke	Genus, 72N–5S
8–2.5 Ma	<i>Tellina woodringi</i> Adegoke	“ <i>Tellina</i> ” <i>woodringi</i> Adegoke	Genus, 72N–5S
17–13 Ma	<i>Terebra adalaidana</i> Addicott	<i>Terebra (Fusoterebra?) adalaidana</i> Addicott	Genus, 34N–3S; intertidal to 280 m
17–13 Ma	<i>Terebra</i> cf. <i>T. lepta</i> Woodring	<i>Terebra (Paraterebra)</i> cf. <i>T. (P.) lepta</i> Woodring	Genus, 34N–3S
5–2.5 Ma	<i>Terebra</i> cf. <i>T. wolfgangi</i> Toulia	<i>Terebra (Strioterebrum)</i> cf. <i>T. wolfgangi</i> Toulia	Genus, 34N–3S
27–13 Ma	<i>Terebra cooperi</i> Anderson	<i>Strioterebrum cooperi</i> (Anderson)	Genus, 34N–3S
27–13 Ma	<i>Terebra cooperi</i> Anderson	<i>Terebra (Terebra) cooperi</i> (Anderson)	Genus, 34N–3S
27–13 Ma	<i>Terebra cooperi</i> Anderson	<i>Terebra cooperi</i> Anderson	Genus, 34N–3S
13 Ma–H	<i>Terebra dislocata</i> (Say)	<i>Terebra gausapata</i> Brown and Pilsbry	33N–3N; intertidal to 18 m
13 Ma–H	<i>Terebra elata</i> Hinds	<i>Terebra elata</i> Hinds	25N–0; intertidal to 90 m
13 Ma–H	<i>Terebra elata</i> Hinds	<i>Terebra protexta</i> Conrad	25N–0
13? or 5–2.5 Ma	<i>Terebra gausapata</i> Brown and Pilsbry	<i>Terebra (Strioterebrum) gausapata</i> Brown and Pilsbry	Genus, 34N–3S
13–2.5 Ma	<i>Terebra martini</i> English	<i>Strioterebrum</i> aff. <i>S. martini</i> (English)	Genus, 34N–3S
13–2.5 Ma	<i>Terebra martini</i> English	<i>Strioterebrum martini</i> (English)	Genus, 34N–3S
13–2.5 Ma	<i>Terebra martini</i> English	<i>Terebra (Strioterebrum) martini</i> English	Genus, 34N–3S
13–2.5 Ma	<i>Terebra martini</i> English	<i>Terebra martini</i> English	Genus, 34N–3S
N.D.	<i>Terebra</i> n.sp. Addicott	<i>Terebra</i> n.sp. Addicott	Genus, 34N–3S
13 Ma–H	<i>Terebra pedroana</i> Dall	<i>Terebra (Strioterebra) pedroana</i> Dall	34N–27N
13 Ma–H	<i>Terebra pedroana</i> Dall	<i>Terebra pedroana</i> Dall	34N–27N
N.D.	<i>Terebra</i> sp.	<i>Terebra (Strioterebrum)</i> n.sp.	Genus, 34N–3S
N.D.	<i>Terebra</i> sp.	<i>Terebra</i> sp.	Genus, 34N–3S
5 Ma–H	<i>Terebra</i> sp. cf. <i>T. variegata</i> Gray	<i>Terebra</i> sp. cf. <i>T. variegata</i> Gray	25N–3S
17–13 Ma	<i>Terebra stirtoni</i> Addicott	<i>Terebra (Strioterebrum) stirtoni</i> Addicott	Genus, 34N–3S
8–2.5 Ma	<i>Terebratalia arnoldi etchegoini</i> Hertlein and Grant	<i>Terebratalia arnoldi etchegoini</i> Hertlein and Grant (Brachiopoda)	Genus, 38N–23N
8–2.5 Ma	<i>Terebratalia arnoldi</i> Hertlein and Grant	<i>Terebratalia arnoldi</i> Hertlein and Grant	Genus, 38N–23N
5–2.5 Ma	<i>Terebratalia arnoldi</i> subsp. <i>etchegoini</i> Hertlein and Grant	<i>Terebratalia arnoldi</i> subsp. <i>etchegoini</i> Hertlein and Grant	Genus, 38N–23N
8–2.5 Ma	<i>Terebratalia</i> cf. <i>T. arnoldi</i> Grant and Hertlein	<i>Terebratalia</i> cf. <i>T. smithi</i> Arnold	Genus, 38N–23N
5 Ma–H	<i>Terebratalia hemphilli</i> Dall	<i>Terebratalia hemphilli</i> Dall	Genus, 38N–23N
13? or 8 Ma–H	<i>Terebratalia occidentalis</i> (Dall)	<i>Dallinella occidentalis</i> (Dall)	38N–23N
13? or 8 Ma–H	<i>Terebratalia occidentalis</i> (Dall)	<i>Terebratalia occidentalis</i> Dall	38N–23N
5 Ma–H	<i>Terebratalia occidentalis obsoleta</i> (Dall)	<i>Terebratalia occidentalis obsoleta</i> Dall	Species, 38N–23N
N.D.	<i>Terebratalia</i> sp.	<i>Terebratalia</i> sp.	Genus, 38N–23N
5 Ma–H	<i>Terebratalia transversa</i> (Sowerby)	<i>Terebratalia transversa</i> (Sowerby)	57.3N–34N
5 Ma–H	<i>Terebratalia transversa caurina</i> Gould	<i>Terebratalia transversa caurina</i> Gould	57.3N–28N
5 Ma–H	<i>Terebratulina unguicula</i> (Carpenter)	<i>Terebratulina unguicula</i> Carpenter	57N–23N
N.D.	<i>Teredo</i> sp.	<i>Teredo</i> sp.	Genus, 50N–23N; intertidal, boring into wood
13–2.5 Ma	<i>Thais (Stramonita) imperialis</i> (Dall)	<i>Neptunea imperialis</i> (Dall)	Subgenus, 33N–5S; intertidal
13–2.5 Ma	<i>Thais (Stramonita) imperialis</i> (Dall)	<i>Chrysodomus imperialis</i> Dall	Subgenus, 33N–5S
13–2.5 Ma	<i>Thais (Stramonita) imperialis</i> (Dall)	<i>Thais imperialis</i> (Dall)	Subgenus, 33N–5S
13–8 Ma	<i>Thais (Stramonita) ponderosa</i> (Gabb)	<i>Lepthothyra pabloensis</i> (Clark)	Subgenus, 33N–5S
13–8 Ma	<i>Thais (Stramonita) ponderosa</i> (Gabb)	<i>Thais ponderosum</i> (Gabb)	Subgenus, 33N–5S
13–8 Ma	<i>Thais (Stramonita) ponderosa</i> (Gabb)	<i>Leptothyra pabloensis</i> Clark	Subgenus, 33N–5S
13–8 Ma	<i>Thais (Stramonita) ponderosa</i> (Gabb)	<i>Trophon ponderosum diabloensis</i> Clark	Subgenus, 33N–5S
23–13 Ma	<i>Thais (Thaisella) blakei</i> Anderson and Martin	<i>Thais (Thaisella) blakei</i> Anderson and Martin	Subgenus, 25N–5S; mangrove swamps, feeding on oysters

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
23–13 Ma	<i>Thais</i> (<i>Thaisella</i>) <i>blakei</i> Anderson and Martin	<i>Thais blakei</i> Anderson and Martin	Subgenus, 25N–5S
27–13 Ma	<i>Thais</i> (<i>Thaisella</i>) <i>edmondi</i> (Arnold)	<i>Murex</i> (<i>Ocinebra</i>) <i>edmondi</i> (Arnold)	Subgenus, 25N–5S
27–13 Ma	<i>Thais</i> (<i>Thaisella</i>) <i>edmondi</i> (Arnold)	<i>Purpura edmondi</i> Arnold	Subgenus, 25N–5S
27–13 Ma	<i>Thais</i> (<i>Thaisella</i>) <i>edmondi</i> (Arnold)	<i>Thais edmondi</i> Arnold	Subgenus, 25N–5S
27–13 Ma	<i>Thais</i> (<i>Thaisella</i>) <i>edmondi</i> (Arnold)	<i>Thais</i> (<i>Thaisella</i>) <i>edmondi</i> (Arnold)?	Subgenus, 25N–5S
23–17 Ma	<i>Thais panzana</i> Anderson and Martin	<i>Thais panzana</i> Anderson and Martin	Questionable taxonomic assignment
23–17 Ma	<i>Thais wittichi</i> Hertlein and Jordan	<i>Thais wittichi</i> Hertlein and Jordan	Questionable taxonomic assignment
13 Ma–H	<i>Theoduxus</i> (<i>Vittoclithon</i>) <i>luteofasciatus</i> Miller	<i>Neritina picta</i> Sowerby	Gulf of California–5S; margins of mangrove and on mudflats
23 Ma–H	<i>Thracia</i> (<i>Homoeodesma</i>) <i>trapezoides</i> Conrad	<i>Thracia kanakoffi</i> Hertlein	57.4N–28.2N; 11 to 200 m
23 Ma–H	<i>Thracia</i> (<i>Homoeodesma</i>) <i>trapezoides</i> Conrad	<i>Thracia trapezoides</i> (Conrad)	57N–28N
23 Ma–H	<i>Thracia</i> (<i>Homoeodesma</i>) <i>trapezoides</i> Conrad	<i>Thracia trapezoidea</i> Conrad	57N–28N
23 Ma–H	<i>Thracia</i> (<i>Homoeodesma</i>) <i>trapezoides</i> Conrad	<i>Thracia</i> (<i>Thracia</i>) <i>trapezoides</i> Conrad	57N–28N
N.D.	<i>Thracia</i> sp.	<i>Thracia</i> sp.	Genus, 61N–4S; mud flats, intertidal to 750 m
8 Ma–H	<i>Thyasira flexuosa</i> (Montagu)	<i>Thyasira barbarensis</i> Dall	71N–32.7N; 20 to 3000 m
5 Ma–H	<i>Thyasira flexuosa</i> (Montagu)	<i>Thyasira gouldii</i> Philippi	71N–32.7N; 20 to 3000 m
N.D.	<i>Tindaria</i> ? sp.	<i>Tindaria</i> ? sp.	Genus, 48.3N–6N; 366 to 4130 m
27–23 Ma	<i>Tivela</i> (<i>Pachydesma</i>) <i>inezana</i> (Conrad)	<i>Tivela inezana</i> (Conrad)	Genus, 37.9N–4S; intertidal, sand, exposed beaches to 30 m
27–23 Ma	<i>Tivela</i> (<i>Pachydesma</i>) <i>inezana</i> (Conrad)	<i>Tivela</i> sp.	Genus, 38N–4S
27–23 Ma	<i>Tivela</i> (<i>Pachydesma</i>) <i>inezana</i> (Conrad)	<i>Tivela</i> (<i>Pachydesma</i>) <i>inezana</i> (Conrad)	Genus, 38N–4S
N.D.	<i>Tivela</i> (<i>Pachydesma</i>) sp.	<i>Pachydesma</i> sp.	Genus, 38N–4S
8 Ma–H	<i>Tivela</i> (<i>Pachydesma</i>) <i>stultorum</i> (Mawe)	<i>Pachydesma stultorum</i> (Mawe)	37.9N–24.6N; intertidal, in sand of exposed beaches to offshore
8 Ma–H	<i>Tivela</i> (<i>Pachydesma</i>) <i>stultorum</i> (Mawe)	<i>Tivela</i> (<i>Pachydesma</i>) <i>stultorum</i> Mawe	38N–25N
8 Ma–H	<i>Tivela</i> (<i>Pachydesma</i>) <i>stultorum</i> (Mawe)	<i>Tivela crassatelloides</i> (Conrad)	38N–25N
8 Ma–H	<i>Tivela</i> (<i>Pachydesma</i>) <i>stultorum</i> (Mawe)	<i>Tivela stultorum</i> (Mawe)	38N–25N
23 Ma–H	<i>Tivela</i> (<i>Tivela</i>) cf. <i>T. (T.) delesserti</i> Deshayes	<i>Tivela</i> (<i>Tivela</i>) cf. <i>T. (T.) delesserti</i> Deshayes	27N in Gulf of California–8N; on sand beaches
17–5 Ma	<i>Tivela diabloensis</i> Clark	<i>Tivela diabloensis angulata</i> Clark	Genus, 38N–4S
17–5 Ma	<i>Tivela diabloensis</i> Clark	<i>Tivela diabloensis</i> Clark	Genus, 38N–4S
17–5 Ma	<i>Tivela diabloensis</i> Clark	<i>Tivela diabloensis</i> var. <i>angulatum</i> Clark	Genus, 38N–4S
17–5 Ma	<i>Tivela diabloensis</i> Clark	<i>Tivela</i> (<i>Pachydesma</i>) <i>diabloensis</i> Clark	Genus, 38N–4S
23–5 Ma	<i>Tivela gabbi</i> Clark	<i>Tivela gabbi</i> Clark	Genus, 38N–4S
23–5 Ma	<i>Tivela gabbi</i> Clark	<i>Pachydesma gabbi</i> (Clark)	Genus, 38N–4S
23–5 Ma	<i>Tivela gabbi</i> Clark	<i>Tivela</i> (<i>Pachydesma</i>) <i>gabbi</i> Clark	Genus, 38N–4S
17–13 Ma	<i>Tivela inezana</i> ? Conrad	<i>Tivela inezana</i> ? Conrad	Genus, 38N–4S
13–8 Ma	<i>Tivela merriami</i> Trask	<i>Tivela merriami</i> Trask	Genus, 38N–4S
13–8 Ma	<i>Tivela merriami</i> Trask	<i>Tivela merriami</i> Trask (?)	Genus, 38N–4S
N.D.	<i>Tivela</i> sp.	<i>Tivela</i> sp.	Genus, 38N–4S
13–8 Ma	<i>Tivela stanfordia</i> Hall	<i>Tivela stanfordia</i> Hall	Genus, 38N–4S
8–5 Ma	<i>Tivela trigonalis</i> Nomland	<i>Pachydesma trigonalis</i> (Nomland)	Genus, 38N–4S
8–5 Ma	<i>Tivela trigonalis</i> Nomland	<i>Tivela trigonalis</i> Nomland	Genus, 38N–4S
13? or 5 Ma–H	<i>Toxopneustes</i> cf. <i>T. roseus</i> (A. Agassiz) (Echinodermata)	<i>Taxohneustes</i> cf. <i>T. foseus</i> (no author given) (Echinodermata)	25N–3N
23 Ma–H	<i>Trachycardium</i> (<i>Dallocardia</i>) <i>quadragenarium</i> (Conrad)	<i>Cardium</i> (<i>Trachycardium</i>) <i>quadragenarium</i> Conrad	36.7N–27N; intertidal to 50 m; sandflats, bays, and sandy substrate
23 Ma–H	<i>Trachycardium</i> (<i>Dallocardia</i>) <i>quadragenarium</i> (Conrad)	<i>Cardium quadragenarium</i> Conrad	37N–27N (southern range, southern Baja California [McLean, 1978, p. 76])

23 Ma–H	<i>Trachycardium (Dallocardia) quadragenarium</i> (Conrad)	<i>Laevicardium quadragenarium</i> (Conrad) var. <i>femandoense</i> Arnold	37N–27N (Keen, 1971), among Panamic taxa)
23 Ma–H	<i>Trachycardium (Dallocardia) quadragenarium</i> (Conrad)	<i>Trachycardium quadragenarium</i> (Conrad)	37N–27N
23 Ma–H	<i>Trachycardium (Dallocardia) quadragenarium</i> (Conrad)	<i>Trychycardium (Dallocardia) quadragenarium</i> (Conrad)	37N–27N
23 Ma–H	<i>Trachycardium (Dallocardia) senticosum</i> (Sowerby)	<i>Trachycardium (Dallocardia) senticosum</i> (Sowerby)	24N–5S; shallow muddy substrate
17 Ma–H	<i>Trachycardium</i> aff. <i>T. consors</i> (Sowerby)	<i>Trachycardium</i> aff. <i>T. consors</i> (Sowerby)	31N–1S; tide flats to 45 m
23–13 Ma	<i>Trachycardium arcumbona</i> (Wiedey)	<i>Cardium arcumbona</i> Wiedey	Genus, 37N–14S; tide flats, intertidal to 137 m
23–13 Ma	<i>Trachycardium arcumbona</i> (Wiedey)	<i>Trachycardium arcumbona</i> (Wiedey)	Genus, 37N–14S
5 Ma–H	<i>Trachycardium procerum</i> (Sowerby)	<i>Cardium (Mexicardia) procerum</i> Sowerby	24N–14S
23–13 or 8? Ma	<i>Trachycardium schencki</i> (Wiedey)	<i>Cardium schencki</i> Wiedey	Genus, 37N–14S
23–13 or 8? Ma	<i>Trachycardium schencki</i> (Wiedey)	<i>Trachycardium schencki</i> (Wiedey)	Genus, 37N–14S
N.D.	<i>Trachycardium</i> sp.	<i>Trachycardium</i> n.sp.	Genus, 37N–14S
27–13 Ma	<i>Trachycardium vaquerosense</i> (Arnold)	<i>Cardium (Trachycardium) vaquerosensis</i> Arnold	Genus, 37N–14S
27–13 Ma	<i>Trachycardium vaquerosense</i> (Arnold)	<i>Cardium vaquerosense</i> Arnold	Genus, 37N–14S
27–13 Ma	<i>Trachycardium vaquerosense</i> (Arnold)	<i>Cardium vaquerosensis</i> Anderson	Genus, 37N–14S
27–13 Ma	<i>Trachycardium vaquerosense</i> (Arnold)	<i>Trachycardium vaquerosensis</i> (Arnold)	Genus, 37N–14S
27–13 Ma	<i>Trachycardium vaquerosense</i> (Arnold)	<i>Trachycardium vaquerosensis</i> Arnold	Genus, 37N–14S
27–13 Ma	<i>Trachycardium woodringi</i> (Loel and Corey)	<i>Cardium (Trachycardium) woodringi</i> Loel and Corey	Genus, 37N–14S
17 Ma–H	<i>Tresus nuttallii</i> (Conrad)	<i>Standella nasuta</i> (?) Gould	57N–24.6N; bays, and offshore to 30 m
17 Ma–H	<i>Tresus nuttallii</i> (Conrad)	<i>Lutreria traski</i> Conrad	57N–25N
17 Ma–H	<i>Tresus nuttallii</i> (Conrad)	<i>Schizothaerus nuttallii</i> (Conrad)	57N–25N
17 Ma–H	<i>Tresus nuttallii</i> (Conrad)	<i>Tresus nuttallii</i> (Conrad)	57N–25N
13–2.5 Ma	<i>Tresus pajaroanus</i> (Conrad)	<i>Schizothaerus nuttallii pajaroanus</i> (Conrad)	Genus, 60N–25N; bays, intertidal to 80 m, in sand
13–2.5 Ma	<i>Tresus pajaroanus</i> (Conrad)	<i>Schizothaerus nuttallii</i> (Conrad) var. <i>pajaroanus</i> (Conrad)	Genus, 60N–25N
13–2.5 Ma	<i>Tresus pajaroanus</i> (Conrad)	<i>Tresus pajaroanus</i> (Conrad)	Genus, 60N–25N
13–2.5 Ma	<i>Tresus pajaroanus</i> (Conrad)	<i>Schizothaerus pajaroanus</i> Conrad	Genus, 60N–25N
N.D.	<i>Tresus</i> sp.	<i>Tresus</i> sp.	Genus, 60N–25N
N.D.	<i>Tresus</i> sp.	<i>Schizothaerus</i> n.sp.	Genus, 60N–25N
N.D.	<i>Trichotropis</i> sp.	<i>Trichotropis</i> sp.	Genus, 72N–30N; also Arctic Ocean to Japan; 11 to 1190 m
27–23 Ma	<i>Trichotropis tricarinata</i> Addicott	<i>Trichotropis tricarinata</i> Addicott	Genus, 72N–30N; also from Arctic Ocean to Japan
N.D.	<i>Tricolia?</i> sp.	<i>Tricolia?</i> sp.	Genus, 38N–5S, through Gulf of California; intertidal to 70 m
17 Ma–H	<i>Trigoniocardia</i> aff. <i>T. antillarum</i> (d'Orbigny)	<i>Trigoniocardia</i> aff. <i>T. antillarum</i> (d'Orbigny)	Genus, 30N–4S eastern Pacific; species, Caribbean, 4 to 334 m
17 Ma–H	<i>Trigoniocardia</i> cf. <i>T. haitensis</i> (Sowerby)	<i>Trigoniocardia</i> cf. <i>T. haitensis</i> (Sowerby)	Genus, 30N–4S eastern Pacific; species, Caribbean, 24N–15N
N.D.	<i>Trigonostoma</i> sp.	<i>Trigonostoma</i> sp.	Genus, 25N–5S, through Gulf of California
5–2.5 Ma	<i>Trigonulina</i> n.sp. Powell	<i>Ventricordia</i> n.sp. Powell	Genus, 37N–12.1S; 15 to 170 m
5 Ma–H	<i>Trigonulina pacifica</i> Jung	<i>Ventricordia (Trigonulina) ornata</i> d'Orbigny	36.6–12.1S; 15 to 170
13 Ma–H	<i>Trimusculus reticulatus</i> (Sowerby)	<i>Trimusculus reticulatus</i> (Sowerby)	41N? or 37N–18N; intertidal, on rocks
13 Ma–H	<i>Trimusculus reticulatus</i> (Sowerby)	<i>Gadinia reticulata</i> Sowerby	41N? or 37N–18N
5 Ma–H	<i>Triphora pedroana</i> (Bartsch)	<i>Triphora pedroana</i> (Bartsch)	37N–30N
13–8 Ma	<i>Tripneustes californicus</i> (Kew) (Echinodermata)	<i>Hippnoe californica</i> Kew (Echinodermata)	Genus not living
23–17 Ma	<i>Tritonalia</i> cf. <i>T. yneziana</i> Loel and Corey (Ocenebra of authors)	<i>Tritonalia</i> cf. <i>T. yneziana</i> Loel and Corey	Genus, 59N–19N
N.D.	<i>Tritonalia?</i> sp.	<i>Tritonalia?</i> sp.	Genus, 59N–19N
23–17 Ma	<i>Triumphis?</i> n.sp. Addicott (Addicott, 1970a)	<i>Triumphis?</i> n.sp. Addicott (Addicott, 1970a)	Genus, 19N–5N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
5 Ma–H	<i>Trivia</i> (<i>Pusula</i>) cf. <i>T. (P.) sanguinea</i> (Sowerby ex Gray)	<i>Trivia</i> cf. <i>T. sanguinea</i> (Gray)	34N–16N; offshore and intertidally under rocks
5 Ma–H	<i>Trivia</i> (<i>Pusula</i>) <i>sanguinea</i> (Sowerby ex Gray)	<i>Trivia sanguinea</i> (Sowerby)	31 N in Gulf of California–3S; offshore and rare intertidally
N.D.	<i>Trivia</i> n.sp. Powell	<i>Trivia</i> n.sp. Powell	Genus, 37N–5S; intertidal to 92 m
5 Ma–H	<i>Trivia ritteri</i> Raymond	<i>Trivia ritteri</i> Raymond	37N–33N
N.D.	<i>Trivia</i> sp.	<i>Trivia</i> n.sp.	Genus, 37N–5S
17–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>bartoni</i> Arnold	<i>Trophon</i> (<i>Forreria</i>) <i>bartoni</i> Arnold	Subgenus, 28N–5S; 37 to 135 m
13–8 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>daviesi</i> (Trask)	<i>Trophon daviesi</i> Trask	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	<i>Austrotrophon kernensis</i> (Anderson)	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	<i>Forreria carisaensis</i> (Anderson)	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	<i>Trophon carisaensis</i> Arnold	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	<i>Trophon kernensis</i> Anderson	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis</i> Anderson	<i>Trophon oregonensis</i> Anderson and Martin	Subgenus, 28N–5S
27–13 Ma	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis medialis</i> Addicott	<i>Trophon</i> (<i>Austrotrophon</i>) <i>kernensis medialis</i> Addicott	Subgenus, 28N–5S
13–8 Ma	<i>Trophon gillulyi</i> Grant and Eaton	<i>Trophon gillulyi</i> Grant and Eaton	Genus, 72N–5S
13–8 Ma	<i>Trophon gracilis clarki</i> Trask	<i>Trophon gracilis clarki</i> Trask	Genus, 72N–5S
13–8 Ma	<i>Trophon gracilis clarki</i> Trask	<i>Trophon gracilis</i> Perry var. <i>pabloensis</i> Clark	Genus, 72N–5S
N.D.	<i>Trophon</i> sp.	<i>Trophon</i> sp.	Genus, 72N–5S
13? or 5–2.5 Ma	<i>Turbo</i> (<i>Senectus</i>) <i>mounti</i> Schremp	<i>Turbo</i> (<i>Senectus</i>) <i>mounti</i> Schremp	Genus, 28N–5S
23–13 Ma	<i>Turbo topangensis</i> Arnold	<i>Turbo topangensis</i> Arnold	Genus, 28N–5S
23–13 Ma	<i>Turbo topangensis</i> Arnold	<i>Astraea topangensis</i> Arnold	Genus, 28N–5S
17–13 Ma	<i>Turbonilla</i> (<i>Chemnitzia</i>) <i>hannai</i> Addicott	<i>Turbonilla</i> (<i>Chemnitzia</i>) <i>hannai</i> Addicott	Subgenus, 34N–3S, Gulf of California
5 Ma–H	<i>Turbonilla</i> (<i>Chemnitzia</i>) <i>muricatoides</i> Dall and Bartsch	<i>Turbonilla</i> (<i>Chemnitzia</i>) <i>muricatoides</i> Dall and Bartsch	37N
N.D.	<i>Turbonilla</i> (<i>Chemnitzia</i>) n.sp. Powell	<i>Turbonilla</i> (<i>Chemnitzia</i>) n.sp. Powell	Subgenus, 34N–3S, Gulf of California
5 Ma–H	<i>Turbonilla</i> (<i>Mormula</i>) <i>ambusta</i> Dall and Bartsch	<i>Turbonilla</i> (<i>Mormula</i>) <i>ambusta</i> Dall and Bartsch	34N–33N
17–13 Ma	<i>Turbonilla</i> (<i>Ptycheulimella</i>) <i>edisonensis</i> Addicott	<i>Turbonilla</i> (<i>Ptycheulimella</i>) <i>edisonensis</i> Addicott	Subgenus, 25N–10N, Gulf of California
17–13 Ma	<i>Turbonilla</i> (<i>Pyrgiscus</i>) <i>bravoensis</i> Keen	<i>Turbonilla</i> (<i>Pyrgiscus</i>) <i>bravoensis</i> Keen	Subgenus, 28N–5S, Gulf of California
17–13 Ma	<i>Turbonilla</i> (<i>Pyrgiscus</i>) <i>hormigacuesta</i> Addicott	<i>Turbonilla</i> (<i>Pyrgiscus</i>) <i>hormigacuesta</i> Addicott	Subgenus, 28N–5S, Gulf of California
N.D.	<i>Turbonilla</i> (<i>Pyrgiscus</i>) n.sp. Powell	<i>Turbonilla</i> (<i>Pyrgiscus</i>) n.sp. Powell	Subgenus, 25N–5S, Gulf of California
17–13 Ma	<i>Turbonilla</i> (<i>Pyrgolampros</i>) <i>mariposa</i> Keen	<i>Turbonilla</i> (<i>Pyrgolampros</i>) <i>mariposa</i> Keen	Subgenus, 30N in Gulf of California–15N
5 Ma–H	<i>Turbonilla</i> (<i>Strioturbonilla</i>) <i>stylina</i> (Carpenter)	<i>Turbonilla</i> (<i>Strioturbonilla</i>) <i>torquata</i> (Carpenter)	34N–33N
17–13 Ma	<i>Turbonilla</i> (<i>Tragula</i>) <i>greenhornensis</i> Addicott	<i>Turbonilla</i> (<i>Tragula</i>) <i>greenhornensis</i> Addicott	Genus, 60N–5S, Gulf of California; subgenus, European seas
5 Ma–H	<i>Turbonilla</i> (<i>Turbonilla</i>) cf. <i>T. (T.) diegensis</i> Dall and Bartsch	<i>Turbonilla</i> (<i>Turbonilla</i>) cf. <i>T. (T.) diegensis</i> Dall and Bartsch	34N–33N
5–2.5 Ma	<i>Turbonilla alderi</i> Dall and Bartsch	<i>Turbonilla</i> (<i>Pyrgolampros</i>) <i>alderi</i> Dall and Bartsch in Arnold	Genus, 60N–5S, Gulf of California; intertidal to 137 m
5 Ma–H	<i>Turbonilla</i> cf. <i>T. antestriata</i> Dall and Bartsch	<i>Turbonilla</i> cf. <i>T. antestriata</i> Dall and Bartsch	
35N–33N			
5–2.5 Ma	<i>Turbonilla</i> cf. <i>T. arnoldi</i> Dall and Bartsch	<i>Turbonilla</i> cf. <i>T. arnoldi</i> Dall and Bartsch	Genus, 60N–5S, Gulf of California
5 Ma–H	<i>Turbonilla</i> cf. <i>T. halia</i> Dall and Bartsch	<i>Turbonilla</i> cf. <i>T. halia</i> Dall and Bartsch	34N–33N
5–2.5 Ma	<i>Turbonilla</i> cf. <i>T. latifundia</i> Dall and Bartsch	<i>Turbonilla</i> cf. <i>T. latifundia</i> Dall and Bartsch	Genus, 60N–5S, Gulf of California
5 Ma–H	<i>Turbonilla kelseyi</i> Dall and Bartsch	<i>Turbonilla kelseyi</i> Dall and Bartsch	34N–32N
N.D.	<i>Turbonilla</i> sp.	<i>Turbonilla</i> sp.	Genus, 60N–5S, Gulf of California
8–2.5 Ma	<i>Turcica caffee brevis</i> Stewart	<i>Turcica caffee brevis</i> Stewart	Species, 37N–23N; 18 m to 64 m
8–2.5 Ma	<i>Turcica caffee brevis</i> Stewart	<i>Turcica imperialis brevis</i> Stewart	Species, 37N–23N

23–13 Ma	<i>Turricula</i> cf. <i>T. piercei</i> (Arnold)	<i>Clavatula</i> cf. <i>C. labiata</i> Gabb	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , 46 to 280 m
23–13 or 8? Ma	<i>Turricula ochsneri</i> (Anderson and Martin)	<i>Drillia ochsneri</i> Anderson and Martin	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 or 8? Ma	<i>Turricula ochsneri</i> (Anderson and Martin)	<i>Drillia wilsoni</i> Anderson and Martin	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 or 8? Ma	<i>Turricula ochsneri</i> (Anderson and Martin)	<i>Surcula ochsneri</i> Anderson and Martin	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 or 8? Ma	<i>Turricula ochsneri</i> (Anderson and Martin)	<i>Turricula</i> (<i>Turricula</i>) <i>libya</i> Dall	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 or 8? Ma	<i>Turricula ochsneri</i> (Anderson and Martin)	<i>Turricula ochsneri</i> (Anderson and Martin)	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 or 8? Ma	<i>Turricula ochsneri</i> (Anderson and Martin)	<i>Turricula wilsoni</i> (Anderson and Martin)	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 Ma	<i>Turricula piercei</i> (Arnold)	<i>Pleurotoma</i> (<i>Bathytoma</i>) <i>piercei</i> Arnold	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 Ma	<i>Turricula piercei</i> (Arnold)	<i>Turricula piercei babykingensis</i> Adegoke	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 Ma	<i>Turricula piercei</i> (Arnold)	<i>Turricula</i> (<i>Antiplanes</i>) <i>piercei</i> (Arnold)	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 Ma	<i>Turricula piercei</i> (Arnold)	<i>Turricula piercei</i> (Anderson and Martin)	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
23–13 Ma	<i>Turricula piercei</i> (Arnold)	<i>Bathytoma piercei</i> Arnold	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
N.D.	<i>Turricula</i> sp.	<i>Turricula?</i> sp.	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
27? or 23 Ma-13 Ma	<i>Turricula?</i> <i>bulwaldana</i> (Anderson and Martin)	<i>Clathrodrillia buwaldana</i> (Anderson and Martin)	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
27? or 23 Ma-13 Ma	<i>Turricula?</i> <i>bulwaldana</i> (Anderson and Martin)	<i>Drillia buwaldana</i> Anderson and Martin	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
27? or 23 Ma-13 Ma	<i>Turricula?</i> <i>bulwaldana</i> (Anderson and Martin)	<i>Surcula buwaldana</i> Anderson and Martin	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
27? or 23 Ma-13 Ma	<i>Turricula?</i> <i>bulwaldana</i> (Anderson and Martin)	<i>Turricula buwaldana</i> (Anderson and Martin)	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
N.D.	<i>Turricula?</i> sp.	<i>Turricula?</i> sp.	Genus, 55N–32N, Pacific Coast; if <i>Fusiturricula</i> , Panamic
N.D.	<i>Turris</i> sp.	<i>Turris</i> sp.	Questionable taxonomic assignment
17–13 Ma	<i>Turritella</i> cf. <i>T. padronesensis</i> Grant and Eaton	<i>Turritella</i> (<i>Torcula?</i>) cf. <i>T. (T.?) padronesensis</i> Grant and Eaton	Genus, 37N–3S, tropical Gulf Coast (<i>T. altilira</i>); 18 to 180 m
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana altacorona</i> Loel and Corey	<i>Turritella inezana</i> (Conrad) <i>altacorona</i> Loel and Corey	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana altacorona</i> Loel and Corey	<i>Turritella inezana alta corona</i> Loel and Corey	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana bicarina</i> Loel and Corey	<i>Turritella inezana</i> (Conrad) <i>bicarina</i> Loel and Corey	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana</i> Conrad	<i>Turritella inezana</i> (Conrad) var.	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana</i> Conrad	<i>Turritella inezana</i> Conrad	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana</i> forma <i>hoffmannii</i> Gabb	<i>Turritella inezana</i> forma <i>hoffmannii</i> Gabb	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana</i> forma <i>hoffmannii</i> Gabb	<i>Turritella hoffmannii</i> Gabb	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana</i> forma <i>hoffmannii</i> Gabb	<i>Turritella inezana hoffmannii</i> Gabb	Subgenus, Atlantic, 35N–15N
27–17 Ma	<i>Turritella</i> (<i>Torcula</i>) <i>inezana pervulgata</i> Merriam	<i>Turritella variata</i> Conrad	Subgenus, Atlantic, 35N–15N

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27–17 Ma	<i>Turritella (Torcula) inezana pervulgata</i> Merriam	<i>Turritella inezana pervulgata</i> Merriam	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella (Torcula) inezana santana</i> Loel and Corey	<i>Turritella (Torcula) inezana santana</i> Loel and Corey	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella (Torcula) inezana santana</i> Loel and Corey	<i>Turritella inezana</i> (Conrad) <i>santana</i> Loel and Corey	Subgenus, Atlantic, 35N–15N
27–23 Ma	<i>Turritella (Torcula) inezana sespeensis</i> Arnold	<i>Turritella inezana</i> (Conrad) <i>sespeensis</i> Arnold	Subgenus, Atlantic, 35N–15N
23–17 Ma	<i>Turritella (Torcula)</i> sp. aff. <i>T. (T.) altilira</i> Conrad	<i>Turritella</i> sp. aff. <i>T. altilira</i> Conrad	Subgenus, Atlantic, 35N–15N
13–8 Ma	<i>Turritella</i> aff. <i>T. freya</i> Nomland	<i>Turritella</i> aff. <i>T. freya</i> Nomland	Genus, 37N–3S, closely related to <i>T. gonostoma</i> , Gulf of California–3S
23–8 Ma	<i>Turritella carrisaensis</i> Anderson and Martin	<i>Turritella carisaensis</i> ss. Anderson and Martin	Genus, 37N–3S
23–8 Ma	<i>Turritella carrisaensis</i> Anderson and Martin	<i>Turritella carrisaensis</i> Anderson and Martin	Genus, 37N–3S
23–8 Ma	<i>Turritella carrisaensis</i> Anderson and Martin	<i>Turritella montereyana</i> Wiedey	Genus, 37N–3S
13 Ma–H	<i>Turritella cooperi</i> Carpenter	<i>Turritella cooperi</i> Carpenter	37N–28N; sand and mud substrate, 20 m or more
8–5 Ma	<i>Turritella cooperi fernandoensis</i> Arnold	<i>Turritella cooperi</i> Carpenter <i>fernandoensis</i> Arnold	Species, 37N–28N
8–5 Ma	<i>Turritella cooperi nova</i> Nomland	<i>Turritella cooperi nova</i> Nomland	Species, 37N–28N
8–5 Ma	<i>Turritella cooperi nova</i> Nomland	<i>Turritella nova</i> Nomland	Species, 37N–28N
13–8 Ma	<i>Turritella freya</i> Nomland	<i>Turritella freya</i> Nomland	Genus, 37N–3S, closely related to <i>T. gonostoma</i> , Gulf of California–3S
13–2.5 Ma	<i>Turritella imperialis</i> Hanna	<i>Turritella imperialis</i> Hanna	Genus, 37N–3S, fossils Gulf of California region, “tropical” stock
5 Ma–H	<i>Turritella jewettii</i> Carpenter	<i>Turritella jewettii</i> Carpenter	34N–16N
17–13 Ma	<i>Turritella kernensis</i> Addicott	<i>Turritella kernensis</i> Addicott	Genus, 37N–3S, closely related to <i>T. gonostoma</i> , Gulf of California–3S
13–8 Ma	<i>Turritella margaritana</i> Nomland	<i>Turritella margaritana</i> Nomland	Genus, 37N–3S
23–13 Ma	<i>Turritella moodyi</i> Merriam	<i>Turritella moodyi</i> Merriam	Genus, 37N–3S
8 Ma–H	<i>Turritella</i> n.sp. aff. <i>T. gonostoma</i> Valenciennes	<i>Turritella</i> n.sp. (<i>T. broderipiana</i> stock)	<i>T. gonostoma</i> , Gulf of California–3S; see Allmon et al. (1992)
27–13 Ma	<i>Turritella ocoyana</i> Conrad	<i>Turritella ooyana bosei</i> Hertlein and Jordan	Genus, 37N–3S, a “tropical” form or stock according to authors
27–13 Ma	<i>Turritella ocoyana</i> Conrad	<i>Turritella ocoyana</i> (Conrad) <i>bosei</i> (Hertlein and Jordan)	Genus, 37N–3S, a “tropical” form or stock according to authors
27–13 Ma	<i>Turritella ocoyana</i> Conrad	<i>Turritella ocoyana</i> (Conrad) <i>wittichi</i> (Hertlein and Jordan)	Genus, 37N–3S, a “tropical” form or stock according to authors
27–13 Ma	<i>Turritella ocoyana</i> Conrad	<i>Turritella ocoyana</i> Conrad	Genus, 37N–3S, a “tropical” form or stock according to authors
27? or 23–13 Ma	<i>Turritella ocoyana</i> forma <i>topangaensis</i> Merriam	<i>Turritella ocoyana topangaensis</i> Merriam	Genus, 37N–3S, a “tropical” form or stock according to authors
27? or 23–13 Ma	<i>Turritella ocoyana</i> forma <i>topangaensis</i> Merriam	<i>Turritella topangensis</i> Richards	Genus, 37N–3S, a “tropical” form or stock according to authors
27? or 23–13 Ma	<i>Turritella ocoyana</i> forma <i>topangaensis</i> Merriam	<i>Turritella ocoyana</i> forma <i>topangensis</i> Merriam	Genus, 37N–3S, a “tropical” form or stock according to authors
27? or 23–13 Ma	<i>Turritella ocoyana</i> forma <i>topangaensis</i> Merriam	<i>Turritella ocoyana bosei</i> (Hertlein and Jordan)	Genus, 37N–3S, a “tropical” form or stock according to authors
23–17 Ma	<i>Turritella oregonensis</i> (Conrad)	<i>Turritella oregonensis</i> (Conrad)	Genus, 37N–3S
N.D.	<i>Turritella</i> sp.	<i>Turritella</i> sp.	Genus, 37N–3S
27–23 Ma	<i>Turritella temblorensis</i> forma <i>tritschi</i> Hertlein	<i>Turritella temblorensis tritschi</i> Hertlein	Genus, 37N–3S
27–23 Ma	<i>Turritella temblorensis</i> forma <i>tritschi</i> Hertlein	<i>Turritella tritschi</i> Hertlein	Genus, 37N–3S
27–13 Ma	<i>Turritella temblorensis</i> Wiedey	<i>Turritella temblorensis</i> Wiedey	Genus, 37N–3S
27–13 Ma	<i>Turritella temblorensis</i> Wiedey	<i>Turritella variata</i> Conrad	Genus, 37N–3S

8–2.5 Ma	<i>Turritella vanvlecki</i> Arnold	<i>Turritella vanvlecki</i> Arnold	Genus, 37N–3S, closely related to <i>T. gonostoma</i> , Gulf of California–3S
8–2.5 Ma	<i>Turritella vanvlecki</i> Arnold <i>hemphilli</i> Applin	<i>Turritella gonostoma</i> forma <i>hemphilli</i> Merriam	Genus, 37N–3S, closely related to <i>T. gonostoma</i> , Gulf of California–3S
8–2.5 Ma	<i>Turritella vanvlecki</i> Arnold <i>hemphilli</i> Applin	<i>Turritella gonostoma hemphilli</i> Applin	Genus, 37N–3S, closely related to <i>T. gonostoma</i> , Gulf of California–3S
17–13 Ma 13 Ma–H	<i>Tyhis</i> (<i>Talityphis</i>) <i>lampada</i> Keen <i>Upogebia</i> cf. <i>pugetensis</i> Weymouth (Arthropoda)	<i>Tyhis</i> (<i>Talityphis</i>) <i>lampada</i> Keen <i>Upogebia</i> cf. <i>U. pugetensis</i> Weymouth (Arthropoda)	Subgenus, Gulf of California–8N 60N–30N
27–13 Ma	<i>Vaquerosella andersoni</i> (Twitchell) (Echinodermata)	<i>Echinarachinus andersoni</i> (Twitchell) (Echinodermata)	Genus not living
27–13 Ma	<i>Vaquerosella andersoni</i> (Twitchell)	<i>Scutella andersoni</i> Twitchell	Genus not living
27–13 Ma	<i>Vaquerosella andersoni</i> (Twitchell)	<i>Vaquerosella andersoni</i> (Twitchell)	Genus not living
23–13 Ma	<i>Vaquerosella coreyi</i> Durham	<i>Echinarachnius norrisi</i> Pack	Genus not living
23–13 Ma	<i>Vaquerosella coreyi</i> Durham	<i>Scutella norrisi</i> Pack	Genus not living
23–13 Ma	<i>Vaquerosella coreyi</i> Durham?	<i>Vaquerosella coreyi</i> Durham	Genus not living
17–13 Ma	<i>Vaquerosella durhami</i> Adegoke	<i>Vaquerosella durhami</i> Adegoke	Genus not living
23–13 Ma	<i>Vaquerosella kewi</i> (Grant and Eaton)	<i>Echinarachnius kewi</i> Grant and Eaton	Genus not living
23–13 Ma	<i>Vaquerosella kewi</i> (Grant and Eaton)	<i>Vaquerosella kewi</i> (Grant and Eaton)	Genus not living
27–13 Ma	<i>Vaquerosella merriami</i> (Anderson)	<i>Scutella merriami</i> (Anderson)	Genus not living
27–13 Ma	<i>Vaquerosella merriami</i> (Anderson)	<i>Scutella merriami</i> F.M. Anderson	Genus not living
27–13 Ma	<i>Vaquerosella merriami</i> (Anderson)	<i>Vaquerosella merriami</i> (Anderson)	Genus not living
27–13 Ma	<i>Vaquerosella merriami</i> (Anderson)	<i>Astrodapsis merriami</i> Anderson	Genus not living
27–13 Ma	<i>Vaquerosella merriami</i> (Anderson)	<i>Echinarachnius merriami</i> Anderson	Genus not living
27–17 Ma	<i>Vaquerosella norrisi</i> (Pack)	<i>Echinarachnius norrisi</i> (Pack)	Genus not living
27–17 Ma	<i>Vaquerosella norrisi</i> (Pack)	<i>Scutella norrisi</i> Pack	Genus not living
27–17 Ma	<i>Vaquerosella norrisi</i> (Pack)	<i>Vaquerosella norrisi</i> (Pack)	Genus not living
N.D.	<i>Vaquerosella</i> sp.	<i>Vaquerosella</i> sp.	Genus not living
N.D.	<i>Vaquerosella</i> sp.	<i>Echinarachnius</i> sp.	Genus not living
27–23 Ma	<i>Vaquerosella vaquerosensis</i> (Kew)	<i>Echinarachnius vaquerosensis</i> (Kew)	Genus not living
27–23 Ma	<i>Vaquerosella vaquerosensis</i> (Kew)	<i>Scutaster vaquerosensis kewi</i> Loel and Corey	Genus not living
27–23 Ma	<i>Vaquerosella vaquerosensis</i> (Kew)	<i>Scutaster vaquerosensis</i> Loel and Corey	Genus not living
27–23 Ma	<i>Vaquerosella vaquerosensis kewi</i> (Loel and Corey)	<i>Scutella vaquerosensis</i> Kew	Genus not living
13 Ma–H	<i>Vasum caestus</i> (Broderip)	<i>Vasum caestum</i> Broderip	23N–3S; in sand under rocks at extreme low tide
13–8 Ma	<i>Vasum pufferi</i> Emerson (Smith, 1989)	<i>Vasum pufferi</i> Emerson (Smith, 1989)	Genus, 23N–3S
27–23 Ma	<i>Ventricolaria carrizoensis</i> (Loel and Corey)	<i>Antigona carrizoensis</i> Loel and Corey	Genus, 37N–3N; 10 to 73 m
N.D.	<i>Ventricolaria</i> sp.?	<i>Cytherea</i> (<i>Cytherea</i>) n.sp.	Genus, 37N–3N
N.D.	<i>Ventricolaria</i> sp.?	<i>Antigona</i> sp.	Genus, 37N–3N
27–23 Ma	<i>Ventricolaria vaquerosensis</i> (Loel and Corey)	<i>Antigona vaquerosensis</i> Loel and Corey	Genus, 37N–3N
13–8 Ma	<i>Ventricolaria welchensis</i> Hall	<i>Ventricolaria welchensis</i> Hall	Genus, 37N–3N
13–8 Ma	<i>Ventricolaria willisi</i> (Trask)	<i>Antigona willisi</i> Trask	Genus, 37N–3N
13–8 Ma	<i>Ventricolaria willisi</i> (Trask)	<i>Antigona willisi</i> P.D. Trask	Genus, 37N–3N
N.D.	<i>Vermetus</i> (<i>Thylaeodus</i>) n.sp.	<i>Vermetus</i> (<i>Thylaeodus</i>) n.sp.	Genus, 49N, through 31N–23N in Gulf of California; intertidal
17–13 Ma	<i>Vermetus</i> cf. <i>V. coreyi</i> (Wiedey)	<i>Serpula</i> cf. <i>careyi</i> Wiedey (typographical error for <i>coreyi</i>)	Genus, 49N, through 31N–23N in Gulf of California
17–13 Ma	<i>Vermetus coreyi</i> (Wiedey)	<i>Vermetus</i> (<i>Vermetus</i> , s.l.) <i>creyi</i> (Wiedey)	Genus, 49N, through 31N–23N in Gulf of California
13? or 5 Ma–H	<i>Vermicularia pellucida</i> Broderip and Sowerby	<i>Vermicularia pellucida</i> Broderip and Sowerby	8N–and southward; intertidal
13 Ma–H	<i>Vermicularia pellucida eburnea</i> (Reeve)	<i>Vermicularia eburnea</i> (Reeve)	34N–8N, through Gulf of California; intertidal
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Pecten</i> (<i>Lyropecten</i>) <i>perrini</i> Arnold	Genus not living
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Pecten</i> (<i>Vertipecten</i>) <i>bowersi</i> Arnold	Genus not living
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Pecten</i> (<i>Vertipecten</i>) <i>nevadanus</i> Conrad	Genus not living

continued

TABLE A15. TAXONOMY USED IN THIS STUDY: AGE RANGE OF FOSSIL TAXA AND GEOGRAPHIC RANGE OF EXTANT TAXA (continued)

Time slice(s) assignment (H = Holocene)	Taxonomy used in this study	Taxonomy of authors	Latitudinal range of extant taxa, Eastern Pacific Ocean, unless noted otherwise (geographic range of living species unless noted otherwise, and ecologic niche; if N.D. unknown or taxonomy questionable) (N, °N Lat; S, °S Lat; m, meters)
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Pecten bowersi</i> Arnold	Genus not living
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Pecten nevadanus</i> Conrad?	Genus not living
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Vertipecten nevadanus</i> (Conrad)	Genus not living
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma	<i>Pecten miguelensis submiguelensis</i> Loel and Corey	Genus not living
27–16 Ma	<i>Vertipecten bowersi</i> (Arnold) 27–16 Ma; 23–17.5 Ma (Smith, 1991a)	<i>Pecten (Lyropecten) bowersi</i> Arnold (Loel and Corey)	Genus not living
23–17 Ma	<i>Vertipecten fucanus</i> (Dall) 23–17 Ma; 22–17.5 Ma (Smith, 1991a)	<i>Vertipecten fucanus</i> (Dall)	Genus not living
27–17 Ma	<i>Vertipecten kemensis</i> (Hertlein) 27–17 Ma	<i>Lyropecten miguelensis</i> (Arnold)	Genus not living
27–17 Ma	<i>Vertipecten kemensis</i> (Hertlein) 27–17 Ma	<i>Pecten (Lyropecten) perrini</i> Arnold	Genus not living
27–17 Ma	<i>Vertipecten kemensis</i> (Hertlein) 27–17 Ma	<i>Pecten (Patinopecten) kemensis</i> Hertlein	Genus not living
27–17 Ma	<i>Vertipecten kemensis</i> (Hertlein) 27–17 Ma	<i>Pecten perrini</i> Arnold	Genus not living
27–17 Ma	<i>Vertipecten kemensis</i> (Hertlein) 27–17 Ma	<i>Vertipecten nevadanus</i> (Conrad)	Genus not living
27–17 Ma	<i>Vertipecten kemensis</i> (Hertlein) 27–17 Ma	<i>Vertipecten nevadanus</i> (Conrad) of Grant and Eaton	Genus not living
35–22 Ma	<i>Vertipecten perrini</i> (Arnold) 35–22 Ma	<i>Pecten (Lyropecten) perrini</i> Arnold	Genus not living
35–22 Ma	<i>Vertipecten perrini</i> (Arnold) 35–22 Ma	<i>Pecten perrini</i> Arnold	Genus not living
27–23 Ma	<i>Vertipecten perrini</i> (Arnold) transitional with <i>V.</i> <i>kemensis</i> (Hertlein)	<i>Pecten (Lyropecten) perrini</i> Arnold	Genus not living
8–2.5 Ma	<i>Vesicomya (Calyptogena) gibbera</i> (Crickmay)	<i>Calyptogena lasia</i> (Woodring)	Genus, 60N–9.7N
8–2.5 Ma	<i>Vesicomya (Calyptogena) gibbera</i> (Crickmay) (Coan et al., 2000, p. 338)	<i>Phraegena lasia</i> Woodring	Genus, 60N–9.7N
N.D.	<i>Vesicomya (Calyptogena)</i> sp.	<i>Calyptogena</i> n.sp.	Genus, 60N–9.7N
17–13 Ma	<i>Vitrinella (Vitrinellops) lens</i> (Keen)	<i>Teinostoma (Teinostoma?) lens</i> Keen	Subgenus, 24N–5S, through Gulf of California; intertidal to 46 m
17–13 Ma	<i>Vitrinella (Vitrinellops) lens</i> (Keen)	<i>Vitrinella (Vitrinellops) lens</i> (Keen)	Subgenus, 24N–5S, through Gulf of California
5 Ma–H	<i>Vitrinella stearnsi</i> Bartsch	<i>Vitrinella stearnsi</i> Bartsch	37N
N.D.	<i>Voluta</i> sp.	<i>Voluta</i> sp.	Questionable taxonomic assignment
N.D.	<i>Voluta</i> sp.	<i>Voluta</i> n.sp. Loel and Corey	Questionable taxonomic assignment
5–2.5 Ma	<i>Volutopsius eurekaensis</i> Martin?	<i>Volutopsius eurekaensis</i> Martin (?)	Genus, 72N–55N; intertidal to 1464 m
5 Ma–H	<i>Volvulella (Volvulella) cylindrica</i> Carpenter	<i>Volvulella cylindrica</i> Carpenter	48 N–24 N
17–13 Ma	<i>Volvulella gluma</i> Keen	<i>Volvulella gluma</i> Keen	Genus, 48N–8N; 27 to 549 m
17–13 Ma	<i>Volvulella joaquinensis</i> Addicott	<i>Volvulella joaquinensis</i> Addicott	Genus, 48N–8N
27–13 Ma	<i>Xenuroturrus antiselli</i> (Anderson and Martin)	<i>Clathrodrillia (Moniliopsis) antiselli</i> (Anderson and Martin)	Genus, tropical Indian and Pacific Oceans
27–13 Ma	<i>Xenuroturrus antiselli</i> (Anderson and Martin)	<i>Clathrodrillia antiselli</i> (Anderson and Martin)	Genus, tropical Indian and Pacific Oceans
27–13 Ma	<i>Xenuroturrus antiselli</i> (Anderson and Martin)	<i>Drillia antiselli</i> Anderson and Martin	Genus, tropical Indian and Pacific Oceans
27–13 Ma	<i>Xenuroturrus antiselli</i> (Anderson and Martin)	<i>Thesbia antiselli</i> (Anderson and Martin)	Genus, tropical Indian and Pacific Oceans
17–2.5 Ma	<i>Xylotrya?</i> sp.	<i>Xenuroturrus antiselli</i> (Anderson and Martin)	Genus, tropical Indian and Pacific Oceans
5–2.5 Ma	<i>Yabepecten condoni</i> (Hertlein) 5–2.5 Ma	<i>Xylotrya</i> sp. a.	Tube; questionable taxonomic assignment
5 Ma–H	<i>Yoldia (Cnesterium)</i> cf. <i>Y. (C.) seminuda</i> Dall	<i>Yabepecten condoni</i> (Hertlein)	Genus, living Japan
8–2.5 Ma	<i>Yoldia (Cnesterium) seminuda</i> Dall	<i>Yoldia</i> cf. <i>Y. scissurata</i> Leach?	71N–34N; 15 to 375 m
8–2.5 Ma	<i>Yoldia (Cnesterium) strigata</i> Dall	<i>Yoldia (Cnesterium) scissurata</i> Dall	71N–34N
8–2.5 Ma	<i>Yoldia (Cnesterium) strigata</i> Dall	<i>Yoldia scissurata</i> Dall subsp. <i>strigata</i> Dall	Subgenus, 71N–34N
8–2.5 Ma	<i>Yoldia (Cnesterium) strigata</i> Dall	<i>Yoldia scissurata</i> Dall var. <i>strigata</i> Dall	Subgenus, 71N–34N
8–2.5 Ma	<i>Yoldia (Cnesterium) strigata</i> Dall	<i>Yoldia scissurata strigata</i> (Dall)	Subgenus, 71N–34N
8–2.5 Ma	<i>Yoldia (Cnesterium) strigata</i> Dall	<i>Yoldia scissurata</i> var. <i>strigata</i> Dall	Subgenus, 71N–34N
8–2.5 Ma	<i>Yoldia (Cnesterium) strigata</i> Dall	<i>Yoldia striagata</i> Dall	Subgenus, 71N–34N
23 Ma–H	<i>Yoldia (Kalayoldia) cooperii</i> Gabb	<i>Portlandia cooperii</i> (Gabb)	40.4N–31.8N; 5 to 40 m

23 Ma–H N.D. 27–13 Ma	<i>Yoldia (Kalayoldia) cooperii</i> Gabb <i>Yoldia (Kalayoldia)</i> sp. <i>Yoldia (Kalayoldia) submontereyensis</i> Arnold	<i>Yoldia cooperi</i> Gabb <i>Yoldia (Kalayoldia)</i> sp. <i>Portlandia cooperi</i> Gabb <i>supramontereyensis</i> Arnold	40N–32N Subgenus, 40N–28N Subgenus, 40N–28N
27–13 Ma 17–8 Ma 17–8 Ma 17–8 Ma 17–8 Ma 17–8 Ma Eocene to 17– 13 Ma	<i>Yoldia (Kalayoldia) submontereyensis</i> Arnold <i>Yoldia (Kalayoldia) supramontereyensis</i> Arnold <i>Yoldia (Kalayoldia) supramontereyensis</i> Arnold <i>Yoldia (Kalayoldia) supramontereyensis</i> Arnold <i>Yoldia (Kalayoldia) supramontereyensis</i> Arnold <i>Yoldia (Kalayoldia) supramontereyensis</i> Arnold <i>Yoldia (Kalayoldia) tenuissima</i> Clark	<i>Yoldia (Kalayoldia) submontereyensis</i> Arnold <i>Yoldia (Kalayoldia) supramontereyensis</i> Arnold <i>Yoldia cooperii</i> Gabb <i>supramontereyensis</i> Arnold <i>Yoldia cooperii supramontereyensis</i> Arnold <i>Yoldia submontereyana</i> Arnold <i>Yoldia supramontereyensis</i> Arnold <i>Yoldia tenuissima</i> Clark	Subgenus, 40N–28N Subgenus, 40N–28N Subgenus, 40N–28N Subgenus, 40N–28N Subgenus, 40N–28N Subgenus, 40N–28N Subgenus, 40N–28N
13–8 Ma 13–8 Ma 5 Ma–H 5 Ma–H 8 Ma–H 23–8 Ma	<i>Yoldia (Kalayoldia?) camerosensis</i> (Clark) <i>Yoldia (Kalayoldia?) camerosensis</i> (Clark) <i>Yoldia (Megayoldia) montereyensis</i> (Dall) <i>Yoldia (Megayoldia) montereyensis</i> (Dall) <i>Yoldia (Megayoldia) thraciaformis</i> (Storer) <i>Yoldia (Yoldia?) temblorensis</i> Anderson and Martin	<i>Yoldia camerosensis</i> Clark <i>Portlandia camerosensis</i> (Clark) <i>Yoldia beringiana</i> Dall <i>Yoldia (Megayoldia) beringiana</i> Dall <i>Yoldia thraciaformis</i> (Storer) <i>Portlandia temblorensis</i> (Anderson and Martin)	Subgenus, 40N–28N Subgenus, 40N–28N 56.5N–36.7N; 200 to 400 m 57N–37N 61.5N–37.7N; 25 to 760 m Subgenus, 71N–40N
23–8 Ma	<i>Yoldia (Yoldia?) temblorensis</i> Anderson and Martin	<i>Yoldia temblorensis</i> Anderson and Marti?	Subgenus, 71N–40N
17–13 Ma 17–13 Ma N.D. 8–5 Ma 23–5 Ma 23–5 Ma 8 Ma–H	<i>Yoldia impressa</i> Conrad <i>Yoldia oregona</i> Shumard <i>Yoldia</i> sp. <i>Yoldia? gala</i> Woodring <i>Zirfaea dentata</i> Gabb <i>Zirfaea dentata</i> Gabb <i>Zirfaea pilsbryi</i> Lowe	<i>Yoldia impressa</i> Conrad <i>Yoldia oregona</i> Shumard <i>Yoldia</i> sp. <i>Yoldia gala</i> Woodring <i>Zirphaea dentata</i> Gabb <i>Zirfaea dentata</i> Gabb <i>Zirfaea gabbi</i> (Tryon)	Genus, 71N–7N; intertidal to 1800 m Genus, 71N–7N Genus, 71N–7N Genus, 71N–7N Genus, 70N–24N Genus, 70N–24N 69.7N–24.6N; intertidal to 125 m, in dense mud of bays
8 Ma–H N.D.	<i>Zirfaea pilsbryi</i> Lowe <i>Zirfaea</i> sp.	<i>Zirfaea pilsbryi</i> Lowe <i>Zirfaea</i> sp.	70N–25N Genus, 70N–25N; intertidal 1 to 125 m, burrowing in mud or shale
N.D. N.D. 5 Ma–H 8–5 Ma	<i>Zirfaea</i> sp. <i>Zirfaea</i> sp. <i>Zonaria (Neobemaya) spadicea</i> (Swainson) <i>Zonaria (Neobernaya) spadicea</i> (Swainson) <i>femandoensis</i> (Arnold) (Groves, 1997),	<i>Pholas</i> sp. <i>Zirphaea</i> sp. <i>Zonaria (Neobemaya) spadicea</i> (Swainson) <i>Cypraea femandoensis</i> Arnold	Genus, 70N–25N Genus, 70N–25N 37N–28N; ledges at low tide and sublittoral Species, 37N–28N; ledges at low tide and sublittoral
17–13 Ma	<i>Zonaria (Zonaria) emmakingae</i> Groves (Groves, 1994)	<i>Zonaria (Zonaria) emmakingae</i> Groves	Subgenus, 26N–5S, through Gulf of California Intertidally under rocks
27–23 Ma	<i>Zonaria (Zonaria)</i> sp. Loel and Corey (L.T. Groves, 2000, written commun.)	<i>Cypraea</i> n.sp. A Loel and Corey	Subgenus, 26N–5S, through Gulf of California Intertidally under rocks
23–17 Ma	<i>Zonaria (Zonaria)</i> sp. Loel and Corey (L.T. Groves, 2000, written commun.)	<i>Cypraea</i> n.sp. C Loel and Corey	Subgenus, 26N–5S, through Gulf of California Intertidally under rocks
17–2.5 Ma	(“ <i>Xylotrya</i> ” sp.) or <i>Xylotrya?</i> sp.	<i>Xylotrya</i> sp.	Type specimen lost; tube; questionable taxonomic assignment

Note: Some taxa listed with an upper age limit of 2.5 Ma may range through the late Pliocene and into the Pleistocene; some taxa with a lower age limit of 27 Ma may range from the early Oligocene Epoch.

*N.D. = Geographic and geologic ranges unknown or taxonomy questionable.