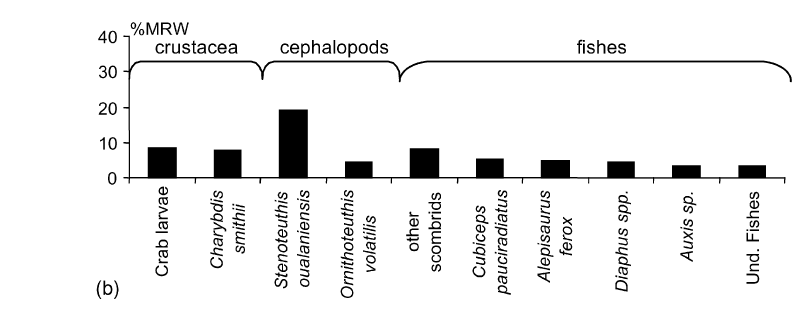
FPP pelagic piscivores Yellowfin tuna, skipjack tuna, Bigeye tuna,

Yellowfin tunas preyed upon a large diversity of mesopelagic fishes, crustaceans (*C. smithii* and crab larvae) and cephalopods (the ommastrephid *Sthenoteuthis oualaniensis*). Crustaceans occurred in 79 samples (71.2%) and contributed 53% by MN and 25% by MRW. Crab larvae (megalop stage) dominated the yellowfin’s diet by MN (25.9%) but, owing to their small size, ranked second by MRW (8.5%). The other dominant crustacean prey were the portunid *C. smithii* (7.7% by MRW and 6.7% by MN), the hyperiid *Phrosina semilunata* (2.2% by MRW and 7.1% by MN), and the stomatopoda *Odontodactylus scyllarus* (1.7% by MRW and 3.6% by MN). The ommastrephids, known as flying squids (*Sthenoteuthis oualaniensis* and *Ornithoteuthis volatilis*) formed the main cephalopod prey by MN (9% and 4.7%, respectively) and by MRW(19.1% and 4.4%, respectively). The most frequent fish families were the Paralepididae, the Myctophidae and the Scombridae. They did not contribute significantly to the total number of prey (11.9% together), but the scombrids and the nomeid *Cubiceps pauciradiatus* (5%) were the main components of the fish prey by MRW(12.0% and 5%, respectively). Epipelagic prey dominated the diet of yellowfin tuna. The pelagic crab *C. smithii* was also of importance (7.7% by MRW) in the diet of yellowfin tuna. Predation on crabs has also been observed in the eastern tropical Pacific Ocean, where the red crab *Pleuroncodes planipes* and swimming crabs of the family Portunidae formed the main part of the yellowfin diet in certain areas (Alverson, 1963). Crab larvae were the most

numerous prey items in numbers (25.9% by MN) in our analyses and their contribution by MRWwas also significant (8.5%). In the study, the yellowfin tuna had the most balanced feeding regime of crustaceans, fishes and cephalopods among the three predators. Crustaceans dominate the yellowfin’s diet by MN (53%), and fishes by MRW (48.4%). In the tropical eastern Pacific Ocean (Alverson, 1963) and in the tropical eastern Atlantic Ocean (Dragovich and Potthoff, 1972), the diet of the yellowfin tuna, analysed by volume and occurrence, exhibited the same global pattern. In the equatorial zone of the Indian Ocean, Kornilova (1981) showed that fishes prey were the most important prey by weight for yellowfin tuna. Stomatopod was more dominant in the diet of yellowfin tuna caught by purse seiners. Among fish prey of the yellowfin tuna, the mesopelagic portion (66%) was greater than the epipelagic (33%)



Contribution of the main prey to the mean proportion by reconstituted weight (MRW) in the diet of (b) yellowfin tuna

**bigeye tuna** fed at deeper depths than yellowfin tuna. Recent studies of tunas’ trophic ecology near the main Hawaiian Islands have (via gut samples) confirmed that

bigeye tuna generally select mesopelagic prey from the SSL, while yellowfin tuna feed primarily on epipelagic prey from the mixed layer even when the fish are caught in the same areas (Grubbs and Holland 2003). Juvenile specimens under 50 cm total lenght are found near the surface and are caught mainly by purse seine and handline with mixed shoals of yellowfin tuna (*Thunnus albacares*) and skipjack tuna (*Katsuwonus pelamis*). Adult specimens are caught mainly by longline in deep waters, at more than 300 meters depth. Bigeye tuna fed mainly upon fishes and cephalopods that migrate between epi and mesopelagic. Prey length ranged between 1 and 110 cm in body length, although most prey items were situated between 1 and 20 cm, with a mean size of 12.5 cm layers. 93.1 % of the prey items of bigeye tuna in the tropical Pacific Ocean belong to the mid-water group of organisms, which is represented mainly by sternoptychids, myctophids, bramids, omosudids and paralepidids. The relatively equal proportions of surface, mid-water and deepwater prey organisms reflect the species’ behavior of constant displacement in the water column in search of prey. All crustaceans and minor groups (pteropods, gastropods and tunicates) are commonly dwellers in the epipelagial zone. The myctophids preyed on by bigeye tuna in the present study did not constituted an important prey.

**yellowfin and skipjack tuna** All tunas caught by purse seine feed almost exclusively

on fish, of the the family Engraulidae both in the Mozambique area as in the Seychelles area , also flying fish, juvenile tunas. Crustaceans account for 9% of the stomach volume

in skipjack and 24% in yellowfin. Most of these crustaceans are stomatopod larvae and amphipods; small numbers of carids and megalopa larvae have also been found. Small cephalopods (mean mantle length 24 mm, standard deviation 19 mm) represent 4.4 % of the

stomach content volume. **All** prey-fish are epipelagic, with the exception of 6 (out of 3 19 prey-fish) mesopelagic fish in skipjack stomachs.

**Juveniles**: These data indicate that fish larvae are the principal diet of juvenile skipjack. In the NEC, Euphausiacea（IRI=162), Amphipoda（9.2), and Copepoda（0.3）appeared. In the NECC, Copepoda（IRI=158.4）, Cephalopoda（66.8）, Euphausuiacea（24.8）, and others including Saggitoidea, Isopoda, and fish eggs（11.6）, and amphipoda（2.1）appeared. Unidentified organisms comprised the second-highest score of the IRI, 214.4 in the NEC and 346.5 in the NECC. These organisms were consisted mainly of digested fish larvae. The most dominant prey item of skipjack juveniles in the two areas was fish larvae. Other major prey items in the NEC area were Euphausiacea, Amphipoda, and Copepoda; whereas those in the NECC area were Copepoda, Cephalopoda, Euphausiacea, and Amphipoda. In the other tuna juveniles, the IRI of fish larvae in the two areas was remarkably high. Other prey, Euphausiacea and Cephalopoda in the NEC area only and Cephalopoda in the NECC area, were also found. These results indicate that the skipjack juvenile is primarily a piscivorous feeder although they also depend on various other prey organisms, whereas the other tuna juveniles are stronger piscivorous feeders.

juveniles:

|  |  |
| --- | --- |
| **prey item** | **probability of consuming** |
| ZME zooplankton | 0.3 |
| ZKL Krill | 0.2 |
|  |  |

adults:

|  |  |
| --- | --- |
| FPK pelagic planktivores | 0.2 |
| CEP Cephalopod | 0.2 |
| FMP mesopelagic fish | 0.2 |
| FPP pelagic piscivores | 0.3 |
| PRW prawns/pelagic crabs | 0.1 |
| ZME zooplankton | 0.05 |

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Title: [Feeding habits of skipjack tuna Katsuwonus pelamis and other tuna Thunnus spp. juveniles in the tropical western Pacific](http://apps.webofknowledge.com/full_record.do?product=UA&search_mode=GeneralSearch&qid=2&SID=X2xa2VRG4nVOJ9KsDdY&page=4&doc=35) Author(s): Tanabe, T Source: FISHERIES SCIENCE  Volume: 67   Issue: 4   Pages: 563-570   DOI: 10.1046/j.1444-2906.2001.00291.x   Published: AUG 2001

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