Performance metric tables

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“**Supplementary Table 4.PM-1.** Summary of performance metric 1 (average annual catch) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 2 | 3 | 2 | 3 | 3 | 3 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 3 | 2 | 3 | 3 | 3 |
|  |  | HCR 2a (PFMC) | 2 | 2 | 2 | 3 | 3 | 3 |
|  |  | HCR 2b (Dynamic PFMC) | 2 | 2 | 2 | 3 | 3 | 3 |
|  |  | HCR 3a (SESSF) | 2 | 2 | 2 | 2 | 2 | 2 |
|  |  | HCR 3b (Dynamic SESSF) | 2 | 2 | 2 | 2 | 2 | 2 |
|  |  | HCR 4 (NEFMC) | 2 | 2 | 2 | 2 | 2 | 2 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 2 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 2 | 3 | 3 | 4 | 3 | 6 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 3 | 3 | 5 | 3 | 6 |
|  |  | HCR 2a (PFMC) | 2 | 3 | 3 | 4 | 3 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 2 | 3 | 3 | 4 | 3 | 6 |
|  |  | HCR 3a (SESSF) | 2 | 3 | 3 | 4 | 3 | 5 |
|  |  | HCR 3b (Dynamic SESSF) | 2 | 3 | 3 | 4 | 3 | 5 |
|  |  | HCR 4 (NEFMC) | 2 | 2 | 3 | 3 | 3 | 5 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 2 | 1 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 1 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 1 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 1 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 4.PM-2.** Summary of performance metric 2 (average interannual variation in catch (IAV)) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.2 | 0.24 | 0.17 | 0.22 | 0.18 | 0.22 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.16 | 0.2 | 0.14 | 0.19 | 0.17 | 0.21 |
|  |  | HCR 2a (PFMC) | 0.15 | 0.19 | 0.14 | 0.18 | 0.15 | 0.19 |
|  |  | HCR 2b (Dynamic PFMC) | 0.14 | 0.19 | 0.13 | 0.18 | 0.15 | 0.2 |
|  |  | HCR 3a (SESSF) | 0.16 | 0.2 | 0.14 | 0.18 | 0.15 | 0.2 |
|  |  | HCR 3b (Dynamic SESSF) | 0.12 | 0.18 | 0.12 | 0.17 | 0.14 | 0.2 |
|  |  | HCR 4 (NEFMC) | 0.11 | 0.15 | 0.11 | 0.15 | 0.13 | 0.17 |
|  |  | HCR 5 (Avg F) | 0.09 | 0.12 | 0.09 | 0.13 | 0.1 | 0.14 |
|  | *Est M* | HCR 1a (NPFMC) | 0.26 | 0.29 | 0.29 | 0.31 | 0.35 | 0.47 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.21 | 0.25 | 0.24 | 0.28 | 0.31 | 0.43 |
|  |  | HCR 2a (PFMC) | 0.2 | 0.23 | 0.23 | 0.26 | 0.27 | 0.39 |
|  |  | HCR 2b (Dynamic PFMC) | 0.19 | 0.23 | 0.22 | 0.26 | 0.27 | 0.39 |
|  |  | HCR 3a (SESSF) | 0.21 | 0.25 | 0.23 | 0.27 | 0.26 | 0.41 |
|  |  | HCR 3b (Dynamic SESSF) | 0.16 | 0.22 | 0.18 | 0.25 | 0.24 | 0.38 |
|  |  | HCR 4 (NEFMC) | 0.14 | 0.18 | 0.16 | 0.21 | 0.21 | 0.32 |
|  |  | HCR 5 (Avg F) | 0.09 | 0.12 | 0.09 | 0.13 | 0.1 | 0.15 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.34 | 0.35 | 0.32 | 0.33 | 0.28 | 0.33 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.34 | 0.35 | 0.32 | 0.33 | 0.28 | 0.33 |
|  |  | HCR 2a (PFMC) | 0.31 | 0.33 | 0.3 | 0.32 | 0.27 | 0.32 |
|  |  | HCR 2b (Dynamic PFMC) | 0.32 | 0.33 | 0.3 | 0.32 | 0.27 | 0.32 |
|  |  | HCR 3a (SESSF) | 0.33 | 0.32 | 0.31 | 0.31 | 0.26 | 0.32 |
|  |  | HCR 3b (Dynamic SESSF) | 0.31 | 0.32 | 0.29 | 0.31 | 0.26 | 0.32 |
|  |  | HCR 4 (NEFMC) | 0.28 | 0.3 | 0.27 | 0.29 | 0.25 | 0.3 |
|  |  | HCR 5 (Avg F) | 0.3 | 0.32 | 0.29 | 0.31 | 0.26 | 0.32 |
|  | *Est M* | HCR 1a (NPFMC) | 0.41 | 0.39 | 0.29 | 0.3 | 0.39 | 0.43 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.38 | 0.39 | 0.28 | 0.3 | 0.39 | 0.45 |
|  |  | HCR 2a (PFMC) | 0.36 | 0.37 | 0.27 | 0.28 | 0.36 | 0.41 |
|  |  | HCR 2b (Dynamic PFMC) | 0.36 | 0.37 | 0.27 | 0.28 | 0.36 | 0.41 |
|  |  | HCR 3a (SESSF) | 0.41 | 0.38 | 0.29 | 0.28 | 0.37 | 0.41 |
|  |  | HCR 3b (Dynamic SESSF) | 0.36 | 0.36 | 0.26 | 0.28 | 0.35 | 0.42 |
|  |  | HCR 4 (NEFMC) | 0.33 | 0.34 | 0.24 | 0.26 | 0.32 | 0.37 |
|  |  | HCR 5 (Avg F) | 0.3 | 0.32 | 0.28 | 0.29 | 0.26 | 0.32 |

**Supplementary Table 4.PM-3.** Summary of performance metric 3 (probability of the fishery being open) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0.99 | 1 | 1 | 1 | 0.99 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 0.99 | 1 | 0.99 | 0.98 | 0.95 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0.99 | 1 | 0.98 | 0.99 | 0.97 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 0.99 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 0.99 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 0.99 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 0.97 | 0.99 | 1 | 1 | 0.99 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 0.99 | 0.98 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 0.99 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |

**Supplementary Table 4.PM-4.** Summary of performance metric 4 (average relative mean squared error in estimate of spawning biomass in 2060) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.02 | 0.02 | 0.26 | 0.25 | 0 | 0.09 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.02 | 0.02 | 0.25 | 0.25 | 0 | 0.08 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.02 | 0.26 | 0.26 | 0.01 | 0.08 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.02 | 0.26 | 0.26 | 0.01 | 0.08 |
|  |  | HCR 3a (SESSF) | 0.02 | 0.02 | 0.27 | 0.27 | 0.01 | 0.08 |
|  |  | HCR 3b (Dynamic SESSF) | 0.02 | 0.02 | 0.27 | 0.27 | 0.01 | 0.08 |
|  |  | HCR 4 (NEFMC) | 0.02 | 0.02 | 0.28 | 0.28 | 0.01 | 0.09 |
|  |  | HCR 5 (Avg F) | 0.03 | 0.02 | 0.29 | 0.29 | 0 | 0.1 |
|  | *Est M* | HCR 1a (NPFMC) | 0.11 | 0.11 | 0.03 | 0.02 | 0.01 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.1 | 0.11 | 0.02 | 0.03 | 0.01 | 0 |
|  |  | HCR 2a (PFMC) | 0.12 | 0.12 | 0.03 | 0.02 | 0.02 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.12 | 0.12 | 0.03 | 0.03 | 0.02 | 0.01 |
|  |  | HCR 3a (SESSF) | 0.14 | 0.14 | 0.03 | 0.03 | 0.03 | 0.01 |
|  |  | HCR 3b (Dynamic SESSF) | 0.14 | 0.14 | 0.03 | 0.03 | 0.03 | 0.01 |
|  |  | HCR 4 (NEFMC) | 0.15 | 0.16 | 0.03 | 0.03 | 0.03 | 0.01 |
|  |  | HCR 5 (Avg F) | 0.16 | 0.16 | 0.04 | 0.04 | 0.06 | 0.09 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.08 | 0.08 | 0.36 | 0.35 | 0.01 | 0.01 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.08 | 0.09 | 0.35 | 0.35 | 0.01 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.09 | 0.09 | 0.39 | 0.37 | 0.02 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.08 | 0.1 | 0.38 | 0.38 | 0.02 | 0.01 |
|  |  | HCR 3a (SESSF) | 0.08 | 0.08 | 0.4 | 0.39 | 0.03 | 0.01 |
|  |  | HCR 3b (Dynamic SESSF) | 0.09 | 0.09 | 0.4 | 0.39 | 0.03 | 0.01 |
|  |  | HCR 4 (NEFMC) | 0.09 | 0.09 | 0.44 | 0.41 | 0.06 | 0.03 |
|  |  | HCR 5 (Avg F) | 0.09 | 0.09 | 0.42 | 0.39 | 0.07 | 0.04 |
|  | *Est M* | HCR 1a (NPFMC) | 0.22 | 0.23 | 0.1 | 0.11 | 0.11 | 0.14 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.22 | 0.24 | 0.1 | 0.12 | 0.12 | 0.16 |
|  |  | HCR 2a (PFMC) | 0.24 | 0.27 | 0.12 | 0.13 | 0.15 | 0.23 |
|  |  | HCR 2b (Dynamic PFMC) | 0.24 | 0.26 | 0.12 | 0.13 | 0.16 | 0.23 |
|  |  | HCR 3a (SESSF) | 0.29 | 0.3 | 0.14 | 0.15 | 0.15 | 0.18 |
|  |  | HCR 3b (Dynamic SESSF) | 0.3 | 0.31 | 0.13 | 0.14 | 0.15 | 0.2 |
|  |  | HCR 4 (NEFMC) | 0.39 | 0.43 | 0.14 | 0.14 | 0.2 | 0.22 |
|  |  | HCR 5 (Avg F) | 0.67 | 0.73 | 0.1 | 0.13 | 0.15 | 0.36 |

**Supplementary Table 4.PM-5.** Summary of performance metric 5 (probability that the population is perceived as undergoing overfishing in the terminal year of the EM) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0.02 | 0.04 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0.02 | 0.04 |
|  |  | HCR 2a (PFMC) | 0.03 | 0.04 | 0.03 | 0.03 | 0.12 | 0.24 |
|  |  | HCR 2b (Dynamic PFMC) | 0.04 | 0.04 | 0.03 | 0.03 | 0.12 | 0.2 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0.01 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0.01 | 0.01 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.04 | 0.04 | 0.01 | 0 | 0.01 | 0.02 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.03 | 0.03 | 0 | 0 | 0.01 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.03 | 0.04 | 0.01 | 0.01 | 0.01 | 0.03 |
|  |  | HCR 2b (Dynamic PFMC) | 0.04 | 0.04 | 0.01 | 0.01 | 0.01 | 0.03 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 4.PM-6.** Summary of performance metric 6 (probability that the population is perceived to be overfished in the terminal year of the EM) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0.01 | 0 | 0.01 | 0 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0.01 | 0 | 0.01 | 0 | 0.01 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0.01 | 0 | 0.01 | 0.01 | 0.02 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0.01 | 0 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 | 0.07 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0.02 | 0 | 0.03 | 0.01 | 0.05 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.03 | 0 | 0.03 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.01 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.09 | 0.03 | 0.02 | 0 | 0.02 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0.01 | 0 | 0 | 0.01 | 0.03 |
|  |  | HCR 3a (SESSF) | 0.01 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.01 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 4.PM-7.** Summary of performance metric 7 (probability that the population is undergoing overfishing as determined from the OM) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.39 | 0.47 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.52 | 0.57 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.93 | 0.93 | 0.02 | 0.03 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.99 | 0.95 | 0.03 | 0.03 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.08 | 0.08 | 0.7 | 0.91 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.09 | 0.06 | 0.97 | 0.96 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0.01 | 0.82 | 0.83 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0.01 | 0.9 | 0.84 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0.03 | 0.01 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.67 | 0.84 | 0.22 | 0.31 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.9 | 0.92 | 0.25 | 0.26 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.84 | 0.92 | 0.08 | 0.12 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.9 | 0.93 | 0.1 | 0.12 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0.03 | 0.03 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0.03 | 0.03 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.67 | 0.72 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 4.PM-8.** Summary of performance metric 8 (probability that the population is overfished as determined from the OM) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.01 | 0.01 | 0 | 0.01 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.02 | 0.02 | 0.01 | 0.01 | 0 | 0.01 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.03 | 0.03 | 0.03 | 0.05 | 0 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.1 | 0 | 0.04 | 0 | 0 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0.01 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.03 | 0 | 0.12 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.31 | 0.55 | 0.54 | 0.75 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.08 | 0 | 0.25 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0.07 | 0.07 | 0.19 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0.04 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0.07 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0.02 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.04 | 0 | 0.04 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.19 | 0 | 0.02 | 0 | 0.06 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.61 | 0.84 | 0.28 | 0.53 | 0.07 | 0 |
|  |  | HCR 2a (PFMC) | 0.35 | 0 | 0.08 | 0 | 0.04 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.21 | 0.45 | 0 | 0.11 | 0.04 | 0 |
|  |  | HCR 3a (SESSF) | 0.1 | 0 | 0 | 0 | 0.03 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0.05 | 0.2 | 0 | 0.06 | 0.03 | 0 |
|  |  | HCR 4 (NEFMC) | 0.1 | 0 | 0 | 0 | 0.02 | 0 |
|  |  | HCR 5 (Avg F) | 0.08 | 0 | 0.04 | 0 | 0 | 0 |

**Supplementary Table 4.PM-9.** Summary of performance metric 9 (terminal spawning stock biomass depletion relative to equilibrium SB0) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.42 | 0.82 | 0.57 | 0.95 | 1.08 | 0.98 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.82 | 0.56 | 0.95 | 1.07 | 0.97 |
|  |  | HCR 2a (PFMC) | 0.44 | 0.86 | 0.6 | 0.98 | 1.14 | 0.95 |
|  |  | HCR 2b (Dynamic PFMC) | 0.44 | 0.86 | 0.6 | 0.98 | 1.14 | 0.95 |
|  |  | HCR 3a (SESSF) | 0.49 | 0.9 | 0.65 | 1.02 | 1.19 | 0.97 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.9 | 0.64 | 1.02 | 1.19 | 0.97 |
|  |  | HCR 4 (NEFMC) | 0.53 | 0.94 | 0.68 | 1.05 | 1.21 | 1.01 |
|  |  | HCR 5 (Avg F) | 0.64 | 1.02 | 0.77 | 1.11 | 1.54 | 1.21 |
|  | *Est M* | HCR 1a (NPFMC) | 0.37 | 0.77 | 0.42 | 0.81 | 0.88 | 0.8 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.36 | 0.76 | 0.41 | 0.8 | 0.88 | 0.8 |
|  |  | HCR 2a (PFMC) | 0.38 | 0.79 | 0.44 | 0.83 | 0.93 | 0.82 |
|  |  | HCR 2b (Dynamic PFMC) | 0.38 | 0.79 | 0.44 | 0.83 | 0.93 | 0.82 |
|  |  | HCR 3a (SESSF) | 0.42 | 0.83 | 0.5 | 0.89 | 0.98 | 0.87 |
|  |  | HCR 3b (Dynamic SESSF) | 0.42 | 0.83 | 0.49 | 0.89 | 0.98 | 0.88 |
|  |  | HCR 4 (NEFMC) | 0.45 | 0.86 | 0.52 | 0.91 | 0.99 | 0.89 |
|  |  | HCR 5 (Avg F) | 0.64 | 1.02 | 0.77 | 1.11 | 1.57 | 1.23 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.42 | 1.97 | 0.33 | 1.31 | 1.02 | 5.44 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.41 | 1.96 | 0.31 | 1.29 | 1.02 | 5.44 |
|  |  | HCR 2a (PFMC) | 0.46 | 2.23 | 0.35 | 1.55 | 1.18 | 6.19 |
|  |  | HCR 2b (Dynamic PFMC) | 0.45 | 2.23 | 0.35 | 1.54 | 1.17 | 6.18 |
|  |  | HCR 3a (SESSF) | 0.49 | 2.38 | 0.39 | 1.65 | 1.11 | 5.61 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 2.37 | 0.37 | 1.65 | 1.12 | 5.63 |
|  |  | HCR 4 (NEFMC) | 0.57 | 2.8 | 0.45 | 2.05 | 1.21 | 5.95 |
|  |  | HCR 5 (Avg F) | 0.51 | 2.52 | 0.38 | 1.73 | 0.85 | 4.3 |
|  | *Est M* | HCR 1a (NPFMC) | 0.32 | 1.26 | 0.41 | 1.71 | 0.58 | 3.28 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.3 | 1.23 | 0.4 | 1.73 | 0.57 | 3.24 |
|  |  | HCR 2a (PFMC) | 0.34 | 1.41 | 0.44 | 1.93 | 0.64 | 4 |
|  |  | HCR 2b (Dynamic PFMC) | 0.33 | 1.41 | 0.44 | 1.91 | 0.64 | 4.08 |
|  |  | HCR 3a (SESSF) | 0.36 | 1.56 | 0.47 | 1.99 | 0.63 | 3.29 |
|  |  | HCR 3b (Dynamic SESSF) | 0.34 | 1.54 | 0.46 | 2.01 | 0.63 | 3.37 |
|  |  | HCR 4 (NEFMC) | 0.39 | 1.81 | 0.55 | 2.37 | 0.69 | 3.65 |
|  |  | HCR 5 (Avg F) | 0.46 | 2.26 | 0.4 | 1.81 | 0.83 | 4.01 |

**Supplementary Table 4.PM-10.** Summary of performance metric 10 (terminal spawning stock biomass depletion relative to dynamic SB0) across OMs for **Pollock**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.41 | 0.69 | 0.57 | 0.78 | 0.96 | 0.85 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.68 | 0.55 | 0.78 | 0.96 | 0.85 |
|  |  | HCR 2a (PFMC) | 0.44 | 0.72 | 0.59 | 0.8 | 1.02 | 0.83 |
|  |  | HCR 2b (Dynamic PFMC) | 0.43 | 0.72 | 0.59 | 0.8 | 1.02 | 0.83 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.76 | 0.64 | 0.83 | 1.06 | 0.85 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.75 | 0.63 | 0.84 | 1.06 | 0.85 |
|  |  | HCR 4 (NEFMC) | 0.52 | 0.78 | 0.67 | 0.86 | 1.08 | 0.88 |
|  |  | HCR 5 (Avg F) | 0.63 | 0.85 | 0.76 | 0.91 | 1.38 | 1.06 |
|  | *Est M* | HCR 1a (NPFMC) | 0.36 | 0.64 | 0.42 | 0.67 | 0.79 | 0.71 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.35 | 0.63 | 0.4 | 0.66 | 0.79 | 0.7 |
|  |  | HCR 2a (PFMC) | 0.38 | 0.66 | 0.44 | 0.68 | 0.84 | 0.72 |
|  |  | HCR 2b (Dynamic PFMC) | 0.38 | 0.66 | 0.44 | 0.68 | 0.84 | 0.72 |
|  |  | HCR 3a (SESSF) | 0.42 | 0.7 | 0.49 | 0.73 | 0.87 | 0.77 |
|  |  | HCR 3b (Dynamic SESSF) | 0.41 | 0.7 | 0.48 | 0.73 | 0.87 | 0.77 |
|  |  | HCR 4 (NEFMC) | 0.44 | 0.72 | 0.51 | 0.74 | 0.88 | 0.78 |
|  |  | HCR 5 (Avg F) | 0.64 | 0.85 | 0.76 | 0.91 | 1.41 | 1.07 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.42 | 0.46 | 0.33 | 0.36 | 0.95 | 1.11 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.46 | 0.3 | 0.36 | 0.95 | 1.11 |
|  |  | HCR 2a (PFMC) | 0.45 | 0.52 | 0.35 | 0.43 | 1.1 | 1.27 |
|  |  | HCR 2b (Dynamic PFMC) | 0.44 | 0.52 | 0.34 | 0.43 | 1.1 | 1.27 |
|  |  | HCR 3a (SESSF) | 0.49 | 0.56 | 0.38 | 0.46 | 1.04 | 1.13 |
|  |  | HCR 3b (Dynamic SESSF) | 0.46 | 0.56 | 0.36 | 0.46 | 1.04 | 1.14 |
|  |  | HCR 4 (NEFMC) | 0.55 | 0.66 | 0.44 | 0.58 | 1.13 | 1.2 |
|  |  | HCR 5 (Avg F) | 0.49 | 0.59 | 0.38 | 0.48 | 0.78 | 0.84 |
|  | *Est M* | HCR 1a (NPFMC) | 0.32 | 0.3 | 0.41 | 0.48 | 0.54 | 0.64 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.3 | 0.28 | 0.39 | 0.48 | 0.52 | 0.64 |
|  |  | HCR 2a (PFMC) | 0.33 | 0.33 | 0.44 | 0.54 | 0.59 | 0.8 |
|  |  | HCR 2b (Dynamic PFMC) | 0.32 | 0.33 | 0.43 | 0.54 | 0.58 | 0.82 |
|  |  | HCR 3a (SESSF) | 0.36 | 0.37 | 0.46 | 0.56 | 0.59 | 0.64 |
|  |  | HCR 3b (Dynamic SESSF) | 0.33 | 0.36 | 0.45 | 0.56 | 0.58 | 0.66 |
|  |  | HCR 4 (NEFMC) | 0.38 | 0.42 | 0.54 | 0.66 | 0.64 | 0.71 |
|  |  | HCR 5 (Avg F) | 0.45 | 0.53 | 0.39 | 0.51 | 0.76 | 0.78 |

**Supplementary Table 5.PM-1.** Summary of performance metric 1 (average annual catch) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 5.PM-2.** Summary of performance metric 2 (average interannual variation in catch (IAV)) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.15 | 0.14 | 0.14 | 0.15 | 0.15 | 0.15 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.1 | 0.11 | 0.1 | 0.12 | 0.11 | 0.13 |
|  |  | HCR 2a (PFMC) | 0.11 | 0.12 | 0.11 | 0.12 | 0.12 | 0.13 |
|  |  | HCR 2b (Dynamic PFMC) | 0.11 | 0.11 | 0.1 | 0.12 | 0.11 | 0.13 |
|  |  | HCR 3a (SESSF) | 0.14 | 0.14 | 0.13 | 0.15 | 0.14 | 0.14 |
|  |  | HCR 3b (Dynamic SESSF) | 0.1 | 0.1 | 0.09 | 0.11 | 0.1 | 0.12 |
|  |  | HCR 4 (NEFMC) | 0.09 | 0.1 | 0.08 | 0.11 | 0.09 | 0.11 |
|  |  | HCR 5 (Avg F) | 0.15 | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 |
|  | *Est M* | HCR 1a (NPFMC) | 0.15 | 0.14 | 0.14 | 0.16 | 0.14 | 0.15 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.1 | 0.11 | 0.1 | 0.13 | 0.11 | 0.13 |
|  |  | HCR 2a (PFMC) | 0.11 | 0.12 | 0.11 | 0.13 | 0.11 | 0.13 |
|  |  | HCR 2b (Dynamic PFMC) | 0.11 | 0.11 | 0.1 | 0.13 | 0.11 | 0.13 |
|  |  | HCR 3a (SESSF) | 0.14 | 0.14 | 0.13 | 0.15 | 0.13 | 0.14 |
|  |  | HCR 3b (Dynamic SESSF) | 0.1 | 0.1 | 0.1 | 0.13 | 0.1 | 0.13 |
|  |  | HCR 4 (NEFMC) | 0.09 | 0.1 | 0.08 | 0.11 | 0.09 | 0.11 |
|  |  | HCR 5 (Avg F) | 0.15 | 0.14 | 0.15 | 0.14 | 0.16 | 0.15 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.37 | 0.31 | 0.48 | 0.35 | 0.35 | 0.29 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.3 | 0.3 | 0.36 | 0.33 | 0.28 | 0.28 |
|  |  | HCR 2a (PFMC) | 0.29 | 0.28 | 0.35 | 0.29 | 0.28 | 0.26 |
|  |  | HCR 2b (Dynamic PFMC) | 0.28 | 0.28 | 0.3 | 0.29 | 0.27 | 0.26 |
|  |  | HCR 3a (SESSF) | 0.31 | 0.26 | 0.36 | 0.26 | 0.28 | 0.25 |
|  |  | HCR 3b (Dynamic SESSF) | 0.26 | 0.26 | 0.26 | 0.26 | 0.24 | 0.25 |
|  |  | HCR 4 (NEFMC) | 0.24 | 0.25 | 0.23 | 0.24 | 0.23 | 0.23 |
|  |  | HCR 5 (Avg F) | 0.25 | 0.25 | 0.24 | 0.24 | 0.23 | 0.23 |
|  | *Est M* | HCR 1a (NPFMC) | 0.31 | 0.28 | 0.23 | 0.21 | 0.27 | 0.25 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.25 | 0.27 | 0.2 | 0.21 | 0.22 | 0.24 |
|  |  | HCR 2a (PFMC) | 0.26 | 0.26 | 0.19 | 0.2 | 0.22 | 0.23 |
|  |  | HCR 2b (Dynamic PFMC) | 0.25 | 0.26 | 0.17 | 0.2 | 0.22 | 0.23 |
|  |  | HCR 3a (SESSF) | 0.28 | 0.26 | 0.22 | 0.21 | 0.24 | 0.23 |
|  |  | HCR 3b (Dynamic SESSF) | 0.23 | 0.25 | 0.18 | 0.2 | 0.2 | 0.22 |
|  |  | HCR 4 (NEFMC) | 0.21 | 0.23 | 0.16 | 0.18 | 0.19 | 0.21 |
|  |  | HCR 5 (Avg F) | 0.25 | 0.26 | 0.24 | 0.25 | 0.23 | 0.24 |

**Supplementary Table 5.PM-3.** Summary of performance metric 3 (probability of the fishery being open) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.94 | 0.95 | 0.91 | 0.95 | 0.94 | 0.96 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 0.95 | 0.97 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 0.98 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 0.97 | 0.99 | 0.97 | 1 | 0.97 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 0.95 | 0.96 | 0.92 | 0.93 | 0.95 | 0.96 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 0.95 | 0.95 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 0.98 | 1 | 0.92 | 0.93 | 0.98 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 0.95 | 0.95 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |

**Supplementary Table 5.PM-4.** Summary of performance metric 4 (average relative mean squared error in estimate of spawning biomass in 2060) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.02 | 0.02 | 0.02 | 0.03 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.02 | 0.02 | 0.02 | 0.03 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.01 | 0.01 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.02 | 0.02 | 0.02 | 0.05 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0.02 | 0.02 | 0.01 | 0.02 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.01 | 0.02 | 0.01 | 0.02 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.02 | 0.02 | 0.02 | 0.02 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.06 | 0.05 | 0.39 | 0.39 | 0.01 | 0.02 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.06 | 0.05 | 0.38 | 0.39 | 0.01 | 0.02 |
|  |  | HCR 2a (PFMC) | 0.05 | 0.05 | 0.4 | 0.4 | 0.01 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.05 | 0.05 | 0.39 | 0.4 | 0.01 | 0.01 |
|  |  | HCR 3a (SESSF) | 0.04 | 0.04 | 0.44 | 0.44 | 0.01 | 0.02 |
|  |  | HCR 3b (Dynamic SESSF) | 0.04 | 0.04 | 0.42 | 0.42 | 0.01 | 0.01 |
|  |  | HCR 4 (NEFMC) | 0.04 | 0.04 | 0.42 | 0.43 | 0.01 | 0.01 |
|  |  | HCR 5 (Avg F) | 0.05 | 0.05 | 0.41 | 0.42 | 0.01 | 0.01 |
|  | *Est M* | HCR 1a (NPFMC) | 0.13 | 0.08 | 0.07 | 0.07 | 0.01 | 0.01 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.14 | 0.09 | 0.07 | 0.08 | 0.02 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.15 | 0.1 | 0.11 | 0.13 | 0.02 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.15 | 0.1 | 0.11 | 0.13 | 0.02 | 0.01 |
|  |  | HCR 3a (SESSF) | 0.11 | 0.08 | 0.1 | 0.13 | 0.01 | 0.01 |
|  |  | HCR 3b (Dynamic SESSF) | 0.16 | 0.12 | 0.11 | 0.14 | 0.02 | 0.02 |
|  |  | HCR 4 (NEFMC) | 0.19 | 0.16 | 0.16 | 0.18 | 0.03 | 0.03 |
|  |  | HCR 5 (Avg F) | 0.13 | 0.1 | 0.05 | 0.05 | 0.01 | 0.01 |

**Supplementary Table 5.PM-5.** Summary of performance metric 5 (probability that the population is perceived as undergoing overfishing in the terminal year of the EM) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.01 | 0.01 | 0.09 | 0.09 | 0.02 | 0.02 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.03 | 0.01 | 0.11 | 0.09 | 0.04 | 0.03 |
|  |  | HCR 2a (PFMC) | 0.21 | 0.19 | 0.35 | 0.41 | 0.23 | 0.21 |
|  |  | HCR 2b (Dynamic PFMC) | 0.24 | 0.2 | 0.42 | 0.39 | 0.24 | 0.21 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0.01 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.07 | 0.04 | 0.29 | 0.23 | 0.07 | 0.05 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.01 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.1 | 0.1 | 0.02 | 0.02 | 0.07 | 0.06 |
|  |  | HCR 2b (Dynamic PFMC) | 0.13 | 0.11 | 0.02 | 0.01 | 0.07 | 0.05 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.25 | 0.2 | 0.95 | 0.91 | 0.39 | 0.39 |

**Supplementary Table 5.PM-6.** Summary of performance metric 6 (probability that the population is perceived to be overfished in the terminal year of the EM) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0 | 0.01 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.04 | 0.01 | 0.04 | 0.01 | 0.03 | 0.01 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0 | 0.01 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.04 | 0.01 | 0.06 | 0 | 0.04 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.05 | 0.03 | 0.07 | 0.05 | 0.05 | 0.03 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0.04 | 0.02 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.09 | 0.05 | 0.17 | 0.06 | 0.08 | 0.05 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0 | 0.06 | 0.03 | 0.01 | 0 |
|  |  | HCR 3a (SESSF) | 0.03 | 0.01 | 0.03 | 0 | 0.03 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0.04 | 0.07 | 0.05 | 0.05 | 0.04 |
|  |  | HCR 5 (Avg F) | 0.05 | 0.01 | 0.06 | 0.04 | 0.05 | 0.02 |
|  | *Est M* | HCR 1a (NPFMC) | 0.05 | 0.02 | 0.04 | 0.02 | 0.04 | 0.01 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0.02 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.1 | 0.06 | 0.11 | 0.09 | 0.09 | 0.07 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0 | 0.07 | 0.05 | 0.02 | 0 |
|  |  | HCR 3a (SESSF) | 0.02 | 0 | 0.05 | 0.05 | 0.02 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0.04 | 0.09 | 0.07 | 0.05 | 0.04 |
|  |  | HCR 5 (Avg F) | 0.05 | 0.04 | 0.18 | 0.09 | 0.06 | 0.05 |

**Supplementary Table 5.PM-7.** Summary of performance metric 7 (probability that the population is undergoing overfishing as determined from the OM) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0.01 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0.01 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.03 | 0.02 | 0.91 | 0.95 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.06 | 0.03 | 0.95 | 0.97 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.42 | 0.35 | 0.95 | 0.97 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.48 | 0.37 | 1 | 1 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0.01 | 0.02 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0.01 | 0.03 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 1 | 1 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.19 | 0.12 | 0.99 | 0.98 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0.01 | 0.01 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0.01 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0.01 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.12 | 0.1 | 0.95 | 0.93 | 0 | 0 |

**Supplementary Table 5.PM-8.** Summary of performance metric 8 (probability that the population is overfished as determined from the OM) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0 | 0.02 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.01 | 0 | 0.01 | 0 | 0.03 | 0.01 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.01 | 0 | 0.01 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.01 | 0 | 0.01 | 0 | 0.03 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.07 | 0 | 0.45 | 0.11 | 0.14 | 0.07 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0.05 | 0.26 | 0.18 | 0.16 | 0.08 |
|  |  | HCR 2a (PFMC) | 0.13 | 0.08 | 0.68 | 0.1 | 0.13 | 0.07 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0.09 | 0.67 | 0.21 | 0.13 | 0.08 |
|  |  | HCR 3a (SESSF) | 0.04 | 0.02 | 0.2 | 0.05 | 0.09 | 0.07 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0.02 | 0.17 | 0.08 | 0.1 | 0.07 |
|  |  | HCR 4 (NEFMC) | 0.06 | 0 | 0.25 | 0.1 | 0.11 | 0.07 |
|  |  | HCR 5 (Avg F) | 0.1 | 0.05 | 0.09 | 0.05 | 0.12 | 0.08 |
|  | *Est M* | HCR 1a (NPFMC) | 0.05 | 0 | 0.07 | 0.05 | 0.08 | 0.07 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0.05 | 0.02 | 0.08 | 0.09 | 0.07 |
|  |  | HCR 2a (PFMC) | 0.09 | 0.07 | 0.1 | 0.07 | 0.08 | 0.07 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0.07 | 0.07 | 0.05 | 0.08 | 0.07 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0.07 | 0.02 | 0.06 | 0.05 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0.02 | 0.02 | 0.07 | 0.05 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0 | 0.09 | 0.07 | 0.08 | 0.07 |
|  |  | HCR 5 (Avg F) | 0.1 | 0.05 | 0.08 | 0.05 | 0.11 | 0.07 |

**Supplementary Table 5.PM-9.** Summary of performance metric 9 (terminal spawning stock biomass depletion relative to equilibrium SB0) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.41 | 0.72 | 0.4 | 0.76 | 0.64 | 0.72 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.71 | 0.39 | 0.75 | 0.63 | 0.72 |
|  |  | HCR 2a (PFMC) | 0.44 | 0.76 | 0.43 | 0.79 | 0.69 | 0.77 |
|  |  | HCR 2b (Dynamic PFMC) | 0.44 | 0.76 | 0.43 | 0.79 | 0.69 | 0.77 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.8 | 0.47 | 0.83 | 0.73 | 0.81 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.8 | 0.47 | 0.83 | 0.73 | 0.81 |
|  |  | HCR 4 (NEFMC) | 0.55 | 0.86 | 0.53 | 0.89 | 0.81 | 0.86 |
|  |  | HCR 5 (Avg F) | 0.29 | 0.56 | 0.28 | 0.62 | 0.44 | 0.56 |
|  | *Est M* | HCR 1a (NPFMC) | 0.41 | 0.72 | 0.41 | 0.68 | 0.68 | 0.7 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.71 | 0.4 | 0.68 | 0.67 | 0.7 |
|  |  | HCR 2a (PFMC) | 0.44 | 0.76 | 0.45 | 0.72 | 0.74 | 0.75 |
|  |  | HCR 2b (Dynamic PFMC) | 0.44 | 0.76 | 0.44 | 0.72 | 0.74 | 0.75 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.8 | 0.48 | 0.78 | 0.78 | 0.78 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.8 | 0.48 | 0.77 | 0.78 | 0.78 |
|  |  | HCR 4 (NEFMC) | 0.54 | 0.86 | 0.55 | 0.83 | 0.87 | 0.84 |
|  |  | HCR 5 (Avg F) | 0.3 | 0.57 | 0.28 | 0.65 | 0.44 | 0.59 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.4 | 0.89 | 0.22 | 0.6 | 0.39 | 0.87 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.39 | 0.89 | 0.21 | 0.6 | 0.39 | 0.87 |
|  |  | HCR 2a (PFMC) | 0.42 | 0.95 | 0.23 | 0.64 | 0.42 | 0.94 |
|  |  | HCR 2b (Dynamic PFMC) | 0.42 | 0.95 | 0.23 | 0.65 | 0.42 | 0.95 |
|  |  | HCR 3a (SESSF) | 0.48 | 1.06 | 0.27 | 0.72 | 0.47 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 1.06 | 0.27 | 0.74 | 0.47 | 1.01 |
|  |  | HCR 4 (NEFMC) | 0.49 | 1.07 | 0.27 | 0.75 | 0.47 | 1.01 |
|  |  | HCR 5 (Avg F) | 0.48 | 1.06 | 0.26 | 0.73 | 0.44 | 0.97 |
|  | *Est M* | HCR 1a (NPFMC) | 0.48 | 0.98 | 0.43 | 0.98 | 0.52 | 1.08 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.48 | 0.99 | 0.43 | 1 | 0.53 | 1.11 |
|  |  | HCR 2a (PFMC) | 0.51 | 1.05 | 0.49 | 1.09 | 0.57 | 1.19 |
|  |  | HCR 2b (Dynamic PFMC) | 0.52 | 1.06 | 0.48 | 1.09 | 0.58 | 1.19 |
|  |  | HCR 3a (SESSF) | 0.54 | 1.1 | 0.52 | 1.13 | 0.57 | 1.17 |
|  |  | HCR 3b (Dynamic SESSF) | 0.56 | 1.15 | 0.52 | 1.14 | 0.6 | 1.21 |
|  |  | HCR 4 (NEFMC) | 0.6 | 1.2 | 0.6 | 1.24 | 0.65 | 1.27 |
|  |  | HCR 5 (Avg F) | 0.48 | 1.05 | 0.27 | 0.73 | 0.44 | 0.96 |

**Supplementary Table 5.PM-10.** Summary of performance metric 10 (terminal spawning stock biomass depletion relative to dynamic SB0) across OMs for **Cod**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.41 | 0.67 | 0.4 | 0.68 | 0.61 | 0.63 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.66 | 0.38 | 0.67 | 0.6 | 0.63 |
|  |  | HCR 2a (PFMC) | 0.44 | 0.7 | 0.43 | 0.71 | 0.65 | 0.67 |
|  |  | HCR 2b (Dynamic PFMC) | 0.44 | 0.7 | 0.43 | 0.71 | 0.65 | 0.67 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.74 | 0.47 | 0.75 | 0.69 | 0.7 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.74 | 0.46 | 0.74 | 0.69 | 0.7 |
|  |  | HCR 4 (NEFMC) | 0.54 | 0.79 | 0.53 | 0.8 | 0.76 | 0.75 |
|  |  | HCR 5 (Avg F) | 0.29 | 0.52 | 0.28 | 0.56 | 0.42 | 0.49 |
|  | *Est M* | HCR 1a (NPFMC) | 0.41 | 0.67 | 0.41 | 0.62 | 0.65 | 0.61 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.65 | 0.4 | 0.61 | 0.64 | 0.61 |
|  |  | HCR 2a (PFMC) | 0.44 | 0.7 | 0.44 | 0.65 | 0.7 | 0.65 |
|  |  | HCR 2b (Dynamic PFMC) | 0.44 | 0.7 | 0.44 | 0.65 | 0.7 | 0.65 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.74 | 0.48 | 0.7 | 0.74 | 0.68 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.74 | 0.48 | 0.69 | 0.74 | 0.68 |
|  |  | HCR 4 (NEFMC) | 0.54 | 0.79 | 0.55 | 0.74 | 0.82 | 0.72 |
|  |  | HCR 5 (Avg F) | 0.3 | 0.53 | 0.28 | 0.59 | 0.42 | 0.51 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.4 | 0.53 | 0.22 | 0.38 | 0.39 | 0.51 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.39 | 0.52 | 0.21 | 0.38 | 0.38 | 0.51 |
|  |  | HCR 2a (PFMC) | 0.42 | 0.56 | 0.23 | 0.41 | 0.42 | 0.55 |
|  |  | HCR 2b (Dynamic PFMC) | 0.42 | 0.56 | 0.23 | 0.41 | 0.42 | 0.56 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.63 | 0.27 | 0.46 | 0.46 | 0.59 |
|  |  | HCR 3b (Dynamic SESSF) | 0.47 | 0.63 | 0.26 | 0.47 | 0.46 | 0.59 |
|  |  | HCR 4 (NEFMC) | 0.48 | 0.63 | 0.27 | 0.47 | 0.46 | 0.6 |
|  |  | HCR 5 (Avg F) | 0.48 | 0.63 | 0.26 | 0.46 | 0.43 | 0.57 |
|  | *Est M* | HCR 1a (NPFMC) | 0.48 | 0.58 | 0.43 | 0.62 | 0.51 | 0.64 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.48 | 0.59 | 0.42 | 0.63 | 0.53 | 0.65 |
|  |  | HCR 2a (PFMC) | 0.51 | 0.62 | 0.48 | 0.69 | 0.56 | 0.7 |
|  |  | HCR 2b (Dynamic PFMC) | 0.51 | 0.63 | 0.48 | 0.69 | 0.57 | 0.7 |
|  |  | HCR 3a (SESSF) | 0.53 | 0.65 | 0.51 | 0.71 | 0.57 | 0.69 |
|  |  | HCR 3b (Dynamic SESSF) | 0.56 | 0.68 | 0.51 | 0.72 | 0.59 | 0.71 |
|  |  | HCR 4 (NEFMC) | 0.6 | 0.71 | 0.59 | 0.78 | 0.64 | 0.75 |
|  |  | HCR 5 (Avg F) | 0.48 | 0.62 | 0.26 | 0.46 | 0.44 | 0.56 |

**Supplementary Table 6.PM-1.** Summary of performance metric 1 (average annual catch) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 6.PM-2.** Summary of performance metric 2 (average interannual variation in catch (IAV)) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.08 | 0.07 | 0.09 | 0.08 | 0.09 | 0.09 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.07 | 0.07 | 0.09 | 0.09 | 0.09 | 0.09 |
|  |  | HCR 2a (PFMC) | 0.08 | 0.07 | 0.09 | 0.09 | 0.09 | 0.09 |
|  |  | HCR 2b (Dynamic PFMC) | 0.08 | 0.07 | 0.09 | 0.09 | 0.09 | 0.09 |
|  |  | HCR 3a (SESSF) | 0.06 | 0.06 | 0.08 | 0.08 | 0.08 | 0.08 |
|  |  | HCR 3b (Dynamic SESSF) | 0.06 | 0.06 | 0.08 | 0.08 | 0.08 | 0.08 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0.05 | 0.07 | 0.07 | 0.07 | 0.07 |
|  |  | HCR 5 (Avg F) | 0.04 | 0.04 | 0.06 | 0.06 | 0.06 | 0.06 |
|  | *Est M* | HCR 1a (NPFMC) | 0.09 | 0.07 | 0.13 | 0.1 | 0.12 | 0.1 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.08 | 0.07 | 0.11 | 0.09 | 0.11 | 0.1 |
|  |  | HCR 2a (PFMC) | 0.08 | 0.07 | 0.12 | 0.1 | 0.12 | 0.11 |
|  |  | HCR 2b (Dynamic PFMC) | 0.08 | 0.07 | 0.12 | 0.1 | 0.12 | 0.11 |
|  |  | HCR 3a (SESSF) | 0.06 | 0.06 | 0.09 | 0.08 | 0.09 | 0.08 |
|  |  | HCR 3b (Dynamic SESSF) | 0.06 | 0.06 | 0.08 | 0.08 | 0.08 | 0.08 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0.05 | 0.07 | 0.07 | 0.07 | 0.07 |
|  |  | HCR 5 (Avg F) | 0.04 | 0.04 | 0.04 | 0.05 | 0.04 | 0.06 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.08 | 0.06 | 0.07 | 0.05 | 0.07 | 0.05 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.08 | 0.06 | 0.07 | 0.05 | 0.07 | 0.05 |
|  |  | HCR 2a (PFMC) | 0.09 | 0.06 | 0.08 | 0.06 | 0.07 | 0.06 |
|  |  | HCR 2b (Dynamic PFMC) | 0.09 | 0.06 | 0.08 | 0.06 | 0.07 | 0.06 |
|  |  | HCR 3a (SESSF) | 0.06 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
|  |  | HCR 3b (Dynamic SESSF) | 0.06 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
|  |  | HCR 5 (Avg F) | 0.02 | 0.03 | 0.02 | 0.03 | 0.02 | 0.03 |
|  | *Est M* | HCR 1a (NPFMC) | 0.09 | 0.06 | 0.14 | 0.11 | 0.12 | 0.1 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.08 | 0.06 | 0.14 | 0.11 | 0.12 | 0.1 |
|  |  | HCR 2a (PFMC) | 0.09 | 0.07 | 0.17 | 0.13 | 0.15 | 0.12 |
|  |  | HCR 2b (Dynamic PFMC) | 0.09 | 0.07 | 0.17 | 0.13 | 0.15 | 0.12 |
|  |  | HCR 3a (SESSF) | 0.06 | 0.04 | 0.1 | 0.07 | 0.09 | 0.07 |
|  |  | HCR 3b (Dynamic SESSF) | 0.06 | 0.04 | 0.1 | 0.07 | 0.09 | 0.07 |
|  |  | HCR 4 (NEFMC) | 0.05 | 0.04 | 0.08 | 0.06 | 0.07 | 0.06 |
|  |  | HCR 5 (Avg F) | 0.02 | 0.03 | 0.02 | 0.03 | 0.02 | 0.03 |

**Supplementary Table 6.PM-3.** Summary of performance metric 3 (probability of the fishery being open) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 |

**Supplementary Table 6.PM-4.** Summary of performance metric 4 (average relative mean squared error in estimate of spawning biomass in 2060) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.01 | 0.01 | 0.09 | 0.08 | 0.01 | 0.01 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.01 | 0.01 | 0.09 | 0.08 | 0.01 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.01 | 0.01 | 0.08 | 0.08 | 0.01 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.01 | 0.01 | 0.08 | 0.08 | 0.01 | 0.01 |
|  |  | HCR 3a (SESSF) | 0.01 | 0.01 | 0.1 | 0.1 | 0.01 | 0.01 |
|  |  | HCR 3b (Dynamic SESSF) | 0.01 | 0.01 | 0.1 | 0.1 | 0.01 | 0.01 |
|  |  | HCR 4 (NEFMC) | 0.01 | 0.01 | 0.12 | 0.11 | 0.02 | 0.01 |
|  |  | HCR 5 (Avg F) | 0.01 | 0.01 | 0.16 | 0.16 | 0.03 | 0.03 |
|  | *Est M* | HCR 1a (NPFMC) | 0.02 | 0.01 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.02 | 0.01 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0.02 | 0.01 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0.02 | 0.01 | 0.02 | 0.02 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0.02 | 0.01 | 0.02 | 0.01 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0.02 | 0.01 | 0.02 | 0.01 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0.01 | 0.01 | 0.02 | 0.01 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.01 | 0.01 | 0.01 | 0.01 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.04 | 0.03 | 0.38 | 0.37 | 0.19 | 0.17 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.04 | 0.03 | 0.38 | 0.37 | 0.19 | 0.17 |
|  |  | HCR 2a (PFMC) | 0.04 | 0.04 | 0.38 | 0.37 | 0.19 | 0.18 |
|  |  | HCR 2b (Dynamic PFMC) | 0.04 | 0.04 | 0.38 | 0.37 | 0.19 | 0.18 |
|  |  | HCR 3a (SESSF) | 0.03 | 0.02 | 0.37 | 0.36 | 0.17 | 0.16 |
|  |  | HCR 3b (Dynamic SESSF) | 0.03 | 0.02 | 0.37 | 0.36 | 0.17 | 0.16 |
|  |  | HCR 4 (NEFMC) | 0.02 | 0.02 | 0.36 | 0.35 | 0.16 | 0.15 |
|  |  | HCR 5 (Avg F) | 0.01 | 0.01 | 0.33 | 0.32 | 0.12 | 0.11 |
|  | *Est M* | HCR 1a (NPFMC) | 0.05 | 0.03 | 0.1 | 0.1 | 0.01 | 0.01 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.05 | 0.04 | 0.1 | 0.1 | 0.01 | 0.01 |
|  |  | HCR 2a (PFMC) | 0.05 | 0.04 | 0.12 | 0.11 | 0.01 | 0.01 |
|  |  | HCR 2b (Dynamic PFMC) | 0.05 | 0.04 | 0.12 | 0.12 | 0.01 | 0.01 |
|  |  | HCR 3a (SESSF) | 0.03 | 0.02 | 0.08 | 0.07 | 0.01 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0.03 | 0.02 | 0.08 | 0.07 | 0.01 | 0 |
|  |  | HCR 4 (NEFMC) | 0.02 | 0.01 | 0.06 | 0.06 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0.02 | 0.02 | 0.01 | 0.01 | 0 | 0 |

**Supplementary Table 6.PM-5.** Summary of performance metric 5 (probability that the population is perceived as undergoing overfishing in the terminal year of the EM) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 6.PM-6.** Summary of performance metric 6 (probability that the population is perceived to be overfished in the terminal year of the EM) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 6.PM-7.** Summary of performance metric 7 (probability that the population is undergoing overfishing as determined from the OM) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 6.PM-8.** Summary of performance metric 8 (probability that the population is overfished as determined from the OM) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0.01 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0.01 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 4 (NEFMC) | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 0 | 0 |

**Supplementary Table 6.PM-9.** Summary of performance metric 9 (terminal spawning stock biomass depletion relative to equilibrium SB0) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.41 | 0.63 | 0.53 | 0.83 | 0.57 | 0.85 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.63 | 0.53 | 0.84 | 0.58 | 0.86 |
|  |  | HCR 2a (PFMC) | 0.38 | 0.6 | 0.51 | 0.8 | 0.55 | 0.82 |
|  |  | HCR 2b (Dynamic PFMC) | 0.38 | 0.6 | 0.51 | 0.8 | 0.55 | 0.82 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.76 | 0.6 | 0.94 | 0.64 | 0.95 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.76 | 0.6 | 0.94 | 0.64 | 0.95 |
|  |  | HCR 4 (NEFMC) | 0.56 | 0.87 | 0.67 | 1.04 | 0.71 | 1.04 |
|  |  | HCR 5 (Avg F) | 0.81 | 1.13 | 0.87 | 1.26 | 0.92 | 1.24 |
|  | *Est M* | HCR 1a (NPFMC) | 0.4 | 0.61 | 0.41 | 0.6 | 0.44 | 0.64 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.39 | 0.61 | 0.4 | 0.6 | 0.44 | 0.64 |
|  |  | HCR 2a (PFMC) | 0.37 | 0.58 | 0.37 | 0.53 | 0.4 | 0.58 |
|  |  | HCR 2b (Dynamic PFMC) | 0.37 | 0.58 | 0.37 | 0.53 | 0.4 | 0.58 |
|  |  | HCR 3a (SESSF) | 0.47 | 0.74 | 0.48 | 0.75 | 0.52 | 0.78 |
|  |  | HCR 3b (Dynamic SESSF) | 0.47 | 0.74 | 0.48 | 0.75 | 0.52 | 0.78 |
|  |  | HCR 4 (NEFMC) | 0.55 | 0.86 | 0.54 | 0.86 | 0.59 | 0.87 |
|  |  | HCR 5 (Avg F) | 0.81 | 1.13 | 0.86 | 1.25 | 0.91 | 1.22 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.4 | 0.67 | 0.47 | 0.72 | 0.49 | 0.72 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.67 | 0.47 | 0.72 | 0.49 | 0.72 |
|  |  | HCR 2a (PFMC) | 0.38 | 0.64 | 0.45 | 0.69 | 0.47 | 0.69 |
|  |  | HCR 2b (Dynamic PFMC) | 0.38 | 0.64 | 0.45 | 0.69 | 0.47 | 0.69 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.79 | 0.54 | 0.83 | 0.57 | 0.85 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.79 | 0.54 | 0.83 | 0.57 | 0.85 |
|  |  | HCR 4 (NEFMC) | 0.55 | 0.88 | 0.61 | 0.92 | 0.63 | 0.94 |
|  |  | HCR 5 (Avg F) | 0.87 | 1.19 | 0.89 | 1.22 | 0.9 | 1.27 |
|  | *Est M* | HCR 1a (NPFMC) | 0.42 | 0.69 | 0.42 | 0.61 | 0.46 | 0.65 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.42 | 0.69 | 0.42 | 0.61 | 0.46 | 0.65 |
|  |  | HCR 2a (PFMC) | 0.41 | 0.67 | 0.39 | 0.56 | 0.43 | 0.59 |
|  |  | HCR 2b (Dynamic PFMC) | 0.41 | 0.67 | 0.39 | 0.56 | 0.43 | 0.59 |
|  |  | HCR 3a (SESSF) | 0.49 | 0.8 | 0.49 | 0.75 | 0.53 | 0.79 |
|  |  | HCR 3b (Dynamic SESSF) | 0.49 | 0.8 | 0.49 | 0.75 | 0.53 | 0.79 |
|  |  | HCR 4 (NEFMC) | 0.56 | 0.89 | 0.55 | 0.83 | 0.58 | 0.87 |
|  |  | HCR 5 (Avg F) | 0.85 | 1.17 | 0.87 | 1.2 | 0.88 | 1.25 |

**Supplementary Table 6.PM-10.** Summary of performance metric 10 (terminal spawning stock biomass depletion relative to dynamic SB0) across OMs for **Arrowtooth flounder**.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0.41 | 0.49 | 0.53 | 0.6 | 0.57 | 0.63 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.49 | 0.53 | 0.61 | 0.57 | 0.63 |
|  |  | HCR 2a (PFMC) | 0.38 | 0.47 | 0.51 | 0.58 | 0.55 | 0.61 |
|  |  | HCR 2b (Dynamic PFMC) | 0.38 | 0.47 | 0.51 | 0.58 | 0.55 | 0.61 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.59 | 0.6 | 0.68 | 0.64 | 0.7 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.59 | 0.6 | 0.68 | 0.64 | 0.7 |
|  |  | HCR 4 (NEFMC) | 0.56 | 0.68 | 0.67 | 0.75 | 0.71 | 0.77 |
|  |  | HCR 5 (Avg F) | 0.81 | 0.88 | 0.87 | 0.91 | 0.92 | 0.91 |
|  | *Est M* | HCR 1a (NPFMC) | 0.39 | 0.47 | 0.41 | 0.43 | 0.44 | 0.47 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.39 | 0.47 | 0.4 | 0.43 | 0.44 | 0.47 |
|  |  | HCR 2a (PFMC) | 0.37 | 0.45 | 0.37 | 0.38 | 0.4 | 0.43 |
|  |  | HCR 2b (Dynamic PFMC) | 0.37 | 0.45 | 0.37 | 0.38 | 0.4 | 0.43 |
|  |  | HCR 3a (SESSF) | 0.47 | 0.57 | 0.48 | 0.54 | 0.52 | 0.58 |
|  |  | HCR 3b (Dynamic SESSF) | 0.47 | 0.57 | 0.48 | 0.54 | 0.52 | 0.58 |
|  |  | HCR 4 (NEFMC) | 0.55 | 0.67 | 0.54 | 0.62 | 0.58 | 0.65 |
|  |  | HCR 5 (Avg F) | 0.81 | 0.88 | 0.86 | 0.9 | 0.9 | 0.9 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0.4 | 0.52 | 0.47 | 0.55 | 0.49 | 0.53 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.4 | 0.52 | 0.47 | 0.55 | 0.49 | 0.53 |
|  |  | HCR 2a (PFMC) | 0.38 | 0.5 | 0.45 | 0.53 | 0.47 | 0.51 |
|  |  | HCR 2b (Dynamic PFMC) | 0.38 | 0.5 | 0.45 | 0.53 | 0.47 | 0.51 |
|  |  | HCR 3a (SESSF) | 0.48 | 0.61 | 0.55 | 0.64 | 0.57 | 0.63 |
|  |  | HCR 3b (Dynamic SESSF) | 0.48 | 0.61 | 0.55 | 0.64 | 0.57 | 0.63 |
|  |  | HCR 4 (NEFMC) | 0.55 | 0.68 | 0.61 | 0.7 | 0.63 | 0.7 |
|  |  | HCR 5 (Avg F) | 0.87 | 0.92 | 0.89 | 0.93 | 0.9 | 0.94 |
|  | *Est M* | HCR 1a (NPFMC) | 0.42 | 0.53 | 0.42 | 0.47 | 0.46 | 0.48 |
|  |  | HCR 1b (Dynamic NPFMC) | 0.41 | 0.53 | 0.42 | 0.47 | 0.46 | 0.48 |
|  |  | HCR 2a (PFMC) | 0.4 | 0.52 | 0.39 | 0.43 | 0.43 | 0.43 |
|  |  | HCR 2b (Dynamic PFMC) | 0.4 | 0.52 | 0.39 | 0.43 | 0.43 | 0.43 |
|  |  | HCR 3a (SESSF) | 0.49 | 0.62 | 0.5 | 0.57 | 0.53 | 0.58 |
|  |  | HCR 3b (Dynamic SESSF) | 0.49 | 0.62 | 0.5 | 0.57 | 0.53 | 0.58 |
|  |  | HCR 4 (NEFMC) | 0.56 | 0.69 | 0.55 | 0.63 | 0.58 | 0.64 |
|  |  | HCR 5 (Avg F) | 0.85 | 0.91 | 0.87 | 0.92 | 0.88 | 0.92 |

**Supplementary Table 8a.** Number of times a management strategy performed the best for performance metrics across OMs for **Pollock**. Note, the maximum for each OM is 10 and across OMs is 60.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 3 | 2 | 5 | 3 | 5 | 3 | 21 |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 2 | 4 | 2 | 4 | 3 | 19 |
|  |  | HCR 2a (PFMC) | 2 | 2 | 2 | 3 | 3 | 3 | 15 |
|  |  | HCR 2b (Dynamic PFMC) | 3 | 3 | 4 | 3 | 3 | 3 | 19 |
|  |  | HCR 3a (SESSF) | 5 | 3 | 5 | 5 | 5 | 3 | 26 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 5 (Avg F) | 4 | 6 | 6 | 6 | 5 | 7 | 34 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 2 | 2 | 1 | 1 | 8 |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 2 | 4 | 3 | 2 | 2 | 17 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 2 | 1 | 7 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 2 | 1 | 7 |
|  |  | HCR 3a (SESSF) | 2 | 3 | 2 | 3 | 3 | 2 | 15 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 3 | 5 | 3 | 5 | 2 | 23 |
|  |  | HCR 4 (NEFMC) | 3 | 3 | 3 | 3 | 4 | 2 | 18 |
|  |  | HCR 5 (Avg F) | 8 | 7 | 6 | 7 | 9 | 7 | **44** |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 2 | 0 | 3 | 4 | 4 | 13 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 2 | 2 | 2 | 3 | 4 | 15 |
|  |  | HCR 2a (PFMC) | 1 | 2 | 1 | 1 | 4 | 6 | 15 |
|  |  | HCR 2b (Dynamic PFMC) | 2 | 2 | 2 | 2 | 4 | 4 | 16 |
|  |  | HCR 3a (SESSF) | 2 | 5 | 2 | 5 | 5 | 5 | 24 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 4 | 4 | 4 | 5 | 5 | 27 |
|  |  | HCR 4 (NEFMC) | 6 | 8 | 3 | 5 | 8 | 6 | 36 |
|  |  | HCR 5 (Avg F) | 3 | 5 | 3 | 5 | 3 | 5 | 24 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 1 | 0 | 2 | 0 | 0 | 3 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0 | 2 | 2 | 2 | 0 | 7 |
|  |  | HCR 2a (PFMC) | 0 | 1 | 1 | 2 | 2 | 3 | 9 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 0 | 2 | 2 | 2 | 1 | 8 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 2 | 5 | 2 | 3 | 14 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 5 | 4 | 4 | 2 | 17 |
|  |  | HCR 4 (NEFMC) | 1 | 2 | 5 | 7 | 4 | 2 | 21 |
|  |  | HCR 5 (Avg F) | 4 | 6 | 3 | 5 | 4 | 6 | 28 |

**Supplementary Table 8b.** Number of times a management strategy performed the best for performance metrics across OMs for **Cod**. Note, the maximum for each OM is 10 and across OMs is 60.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 3 | 5 | 4 | 5 | 4 | 5 | 26 |
|  |  | HCR 1b (Dynamic NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 2a (PFMC) | 2 | 3 | 2 | 3 | 3 | 3 | 16 |
|  |  | HCR 2b (Dynamic PFMC) | 4 | 4 | 4 | 4 | 4 | 4 | 24 |
|  |  | HCR 3a (SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 8 | 8 | 5 | 8 | 5 | 7 | **41** |
|  |  | HCR 5 (Avg F) | 5 | 4 | 5 | 5 | 5 | 4 | 28 |
|  | *Est M* | HCR 1a (NPFMC) | 3 | 5 | 4 | 5 | 5 | 5 | 27 |
|  |  | HCR 1b (Dynamic NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 2a (PFMC) | 2 | 3 | 2 | 2 | 3 | 3 | 15 |
|  |  | HCR 2b (Dynamic PFMC) | 4 | 4 | 4 | 3 | 4 | 4 | 23 |
|  |  | HCR 3a (SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 5 | 5 | 8 | 5 | 8 | 6 | 37 |
|  |  | HCR 5 (Avg F) | 3 | 4 | 3 | 4 | 3 | 4 | 21 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 2 | 0 | 1 | 1 | 2 | 6 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 0 | 1 | 0 | 1 | 1 | 5 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 0 | 0 | 2 | 2 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 2 | 2 | 8 |
|  |  | HCR 3a (SESSF) | 2 | 2 | 2 | 2 | 2 | 2 | 12 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 4 | 2 | 3 | 4 | 4 | 22 |
|  |  | HCR 4 (NEFMC) | 1 | 3 | 1 | 1 | 2 | 2 | 10 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 2 | 2 | 8 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 0 | 0 | 1 | 1 | 4 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 1 | 0 | 1 | 2 | 1 | 7 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 2 | 2 | 8 |
|  |  | HCR 2b (Dynamic PFMC) | 2 | 1 | 1 | 1 | 2 | 2 | 9 |
|  |  | HCR 3a (SESSF) | 2 | 3 | 2 | 3 | 3 | 5 | 18 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 3 | 3 | 4 | 4 | 24 |
|  |  | HCR 4 (NEFMC) | 7 | 8 | 6 | 6 | 7 | 7 | **41** |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 2 | 2 | 8 |

**Supplementary Table 8c.** Number of times a management strategy performed the best for performance metrics across OMs for **Arrowtooth flounder**. Note, the maximum for each OM is 10 and across OMs is 60.”

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 1b (Dynamic NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 2a (PFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 2b (Dynamic PFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3a (SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 5 (Avg F) | 6 | 8 | 8 | 8 | 8 | 8 | **46** |
|  | *Est M* | HCR 1a (NPFMC) | 5 | 5 | 5 | 5 | 4 | 5 | 29 |
|  |  | HCR 1b (Dynamic NPFMC) | 5 | 5 | 5 | 4 | 4 | 5 | 28 |
|  |  | HCR 2a (PFMC) | 5 | 6 | 5 | 6 | 4 | 5 | 31 |
|  |  | HCR 2b (Dynamic PFMC) | 7 | 6 | 6 | 5 | 5 | 4 | 33 |
|  |  | HCR 3a (SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 5 (Avg F) | 7 | 5 | 6 | 6 | 6 | 6 | 36 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 1b (Dynamic NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 2a (PFMC) | 6 | 5 | 5 | 6 | 5 | 6 | 33 |
|  |  | HCR 2b (Dynamic PFMC) | 5 | 6 | 6 | 5 | 6 | 5 | 33 |
|  |  | HCR 3a (SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 5 (Avg F) | 7 | 7 | 7 | 7 | 7 | 7 | 42 |
|  | *Est M* | HCR 1a (NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 1b (Dynamic NPFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 2a (PFMC) | 6 | 6 | 4 | 5 | 5 | 6 | 32 |
|  |  | HCR 2b (Dynamic PFMC) | 5 | 5 | 5 | 6 | 6 | 5 | 32 |
|  |  | HCR 3a (SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 3b (Dynamic SESSF) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 4 (NEFMC) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
|  |  | HCR 5 (Avg F) | 6 | 6 | 6 | 6 | 6 | 6 | 36 |

**Supplementary Table 9a.** Number of times a management strategy performed the best for economic performance metrics (1-3) across OMs for **Pollock**. Note, the maximum for each OM is 3 and across OMs is 18.

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0 | 1 | 0 | 0 | 0 | 2 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 1 | 2 | 2 | 2 | 1 | 2 | **10** |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 1 | 1 | 1 | 1 | 1 | 7 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 0 | 5 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 0 | 5 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 0 | 1 | 0 | 1 | 0 | 3 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 2 | 1 | 1 | 1 | 2 | 1 | 8 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 1 | 1 | 1 | 3 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 0 | 1 | 0 | 1 | 1 | 1 | 4 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 2 | 2 | 1 | 1 | 2 | 2 | **10** |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  | HCR 2a (PFMC) | 0 | 1 | 1 | 1 | 1 | 2 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 0 | 1 | 1 | 1 | 0 | 4 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 0 | 1 | 1 | 1 | 1 | 0 | 4 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 2 | 2 | 1 | 1 | 8 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |

**Supplementary Table 9b.** Number of times a management strategy performed the best for economic performance metrics (1-3) across OMs for **Cod**. Note, the maximum for each OM is 3 and across OMs is 18.

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 0 | 1 | 1 | 1 | 0 | 1 | 4 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 2 | 2 | 1 | 2 | 1 | 1 | 9 |
|  |  | HCR 5 (Avg F) | 2 | 2 | 2 | 2 | 2 | 2 | **12** |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 1 | 1 | 1 | 1 | 1 | 5 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 2 | 1 | 2 | 2 | 9 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 1 | 0 | 1 | 0 | 1 | 3 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0 | 1 | 0 | 1 | 0 | 3 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 0 | 0 | 1 | 1 | 4 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 0 | 1 | 1 | 1 | 5 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 0 | 0 | 1 | 1 | 4 |
|  |  | HCR 4 (NEFMC) | 2 | 2 | 2 | 2 | 2 | 2 | **12** |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |

**Supplementary Table 9c.** Number of times a management strategy performed the best for economic performance metrics (1-3) across OMs for **Arrowtooth flounder**. Note, the maximum for each OM is 3 and across OMs is 18.

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 2 | 2 | 1 | 1 | 1 | 1 | 8 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 2 | 1 | 2 | 8 |
|  |  | HCR 2b (Dynamic PFMC) | 2 | 2 | 2 | 1 | 2 | 1 | 10 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 2 | 2 | 2 | 2 | 10 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 2 | 1 | 1 | 1 | 1 | 1 | 7 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 2 | 1 | 1 | 1 | 1 | 7 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 1 | 1 | 2 | 7 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 2 | 2 | 2 | 1 | 9 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 4 (NEFMC) | 1 | 1 | 1 | 1 | 1 | 1 | 6 |
|  |  | HCR 5 (Avg F) | 2 | 2 | 2 | 2 | 2 | 2 | **12** |

**Supplementary Table 9a.** Number of times a management strategy performed the best for conservation performance metrics (5-8) across OMs for **Pollock**. Note, the maximum for each OM is 4 and across OMs is 24.

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 3 | 2 | 4 | 3 | 4 | 3 | 19 |
|  |  | HCR 1b (Dynamic NPFMC) | 3 | 2 | 3 | 2 | 4 | 3 | 17 |
|  |  | HCR 2a (PFMC) | 1 | 1 | 1 | 2 | 2 | 2 | 9 |
|  |  | HCR 2b (Dynamic PFMC) | 2 | 2 | 3 | 2 | 2 | 2 | 13 |
|  |  | HCR 3a (SESSF) | 4 | 3 | 4 | 4 | 4 | 3 | 22 |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 3 | 4 | 3 | 3 | 4 | 4 | 21 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 2 | 2 | 1 | 1 | 8 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 1 | 3 | 2 | 1 | 1 | 10 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
|  |  | HCR 3a (SESSF) | 2 | 3 | 2 | 3 | 3 | 2 | 15 |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 3 | 4 | 3 | 4 | 2 | 20 |
|  |  | HCR 4 (NEFMC) | 2 | 1 | 2 | 2 | 3 | 1 | 11 |
|  |  | HCR 5 (Avg F) | 3 | 4 | 3 | 4 | 4 | 4 | 22 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 2 | 0 | 2 | 3 | 3 | 10 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 1 | 1 | 1 | 2 | 3 | 9 |
|  |  | HCR 2a (PFMC) | 0 | 1 | 0 | 0 | 3 | 3 | 7 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 1 | 1 | 1 | 3 | 3 | 10 |
|  |  | HCR 3a (SESSF) | 2 | 4 | 2 | 4 | 4 | 4 | 20 |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 3 | 3 | 3 | 4 | 4 | 21 |
|  |  | HCR 4 (NEFMC) | 2 | 4 | 1 | 3 | 4 | 4 | 18 |
|  |  | HCR 5 (Avg F) | 2 | 4 | 2 | 4 | 2 | 4 | 18 |
|  | *Est M* | HCR 1a (NPFMC) | 0 | 1 | 0 | 2 | 0 | 0 | 3 |
|  |  | HCR 1b (Dynamic NPFMC) | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 1 | 1 | 1 | 3 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 1 | 1 | 1 | 1 | 4 |
|  |  | HCR 3a (SESSF) | 1 | 1 | 2 | 4 | 2 | 3 | 13 |
|  |  | HCR 3b (Dynamic SESSF) | 1 | 0 | 4 | 3 | 3 | 2 | 13 |
|  |  | HCR 4 (NEFMC) | 0 | 1 | 1 | 3 | 2 | 1 | 8 |
|  |  | HCR 5 (Avg F) | 2 | 4 | 2 | 4 | 3 | 4 | 19 |

**Supplementary Table 9b.** Number of times a management strategy performed the best for conservation performance metrics (5-8) across OMs for **Cod**. Note, the maximum for each OM is 4 and across OMs is 24.

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 3 | 4 | 3 | 4 | 4 | 4 | 22 |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2a (PFMC) | 1 | 2 | 1 | 2 | 2 | 2 | 10 |
|  |  | HCR 2b (Dynamic PFMC) | 3 | 3 | 3 | 3 | 3 | 3 | 18 |
|  |  | HCR 3a (SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 2 | 2 | 2 | 2 | 2 | 2 | 12 |
|  | *Est M* | HCR 1a (NPFMC) | 3 | 4 | 3 | 4 | 4 | 4 | 22 |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2a (PFMC) | 1 | 2 | 1 | 1 | 2 | 2 | 9 |
|  |  | HCR 2b (Dynamic PFMC) | 3 | 3 | 3 | 2 | 3 | 3 | 17 |
|  |  | HCR 3a (SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 2 | 2 | 2 | 3 | 2 | 2 | 13 |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
|  |  | HCR 1b (Dynamic NPFMC) | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
|  |  | HCR 2b (Dynamic PFMC) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
|  |  | HCR 3a (SESSF) | 2 | 2 | 1 | 1 | 2 | 2 | 10 |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 3 | 2 | 2 | 3 | 3 | 17 |
|  |  | HCR 4 (NEFMC) | 0 | 2 | 0 | 0 | 1 | 1 | 4 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
|  | *Est M* | HCR 1a (NPFMC) | 1 | 1 | 0 | 0 | 1 | 1 | 4 |
|  |  | HCR 1b (Dynamic NPFMC) | 2 | 1 | 0 | 1 | 2 | 1 | 7 |
|  |  | HCR 2a (PFMC) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
|  |  | HCR 2b (Dynamic PFMC) | 1 | 0 | 0 | 0 | 1 | 1 | 3 |
|  |  | HCR 3a (SESSF) | 2 | 3 | 2 | 3 | 3 | 4 | 17 |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 3 | 3 | 3 | 3 | 20 |
|  |  | HCR 4 (NEFMC) | 2 | 3 | 2 | 2 | 2 | 2 | 13 |
|  |  | HCR 5 (Avg F) | 0 | 0 | 0 | 0 | 1 | 1 | 2 |

**Supplementary Table 9c.** Number of times a management strategy performed the best for conservation performance metrics (5-8) across OMs for **Arrowtooth flounder**. Note, the maximum for each OM is 4 and across OMs is 24.

| **System** | **EM** | **HCR** | **1. SS M** | **2. w Ricker** | **3. SS age-M** | **4. w Ricker** | **5. MS** | **6. w Ricker** | **All OMs** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *EBS* | *Fix M* | HCR 1a (NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2a (PFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2b (Dynamic PFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3a (SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  | *Est M* | HCR 1a (NPFMC) | 4 | 4 | 4 | 4 | 3 | 4 | 23 |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 4 | 4 | 3 | 3 | 4 | 22 |
|  |  | HCR 2a (PFMC) | 4 | 4 | 4 | 4 | 3 | 3 | 22 |
|  |  | HCR 2b (Dynamic PFMC) | 4 | 4 | 4 | 4 | 3 | 3 | 22 |
|  |  | HCR 3a (SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
| *GOA* | *Fix M* | HCR 1a (NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2a (PFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2b (Dynamic PFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3a (SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  | *Est M* | HCR 1a (NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 1b (Dynamic NPFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 2a (PFMC) | 4 | 4 | 3 | 4 | 4 | 4 | 23 |
|  |  | HCR 2b (Dynamic PFMC) | 4 | 4 | 3 | 4 | 4 | 4 | 23 |
|  |  | HCR 3a (SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 3b (Dynamic SESSF) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 4 (NEFMC) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |
|  |  | HCR 5 (Avg F) | 4 | 4 | 4 | 4 | 4 | 4 | **24** |