台灣北方三島周邊水域產日本緋鯉(*Upeneus japonicus*)之漁業生物學研究

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本研究利用 2014 年 8 月至 2016 年 6 月間，在臺灣北方三島週邊海域所採之日本緋鯉(*Upeneus japonicus*)進行其漁業生物學研究，樣本數包括：雄魚 459 尾、雌魚 648 尾,無法判別者 50 尾。本種尾叉長(FL)體重(BW)關係式經檢定後雌雄間並無顯著差異，故合併以 $BW=0.023FL^{2.8972}$ 表示。本種耳石一年形成一輪，雌、雄魚之輪紋數最高分別可讀至 7 及 5 輪；其 von Bertalanffy 成長方程式表示為 $FL_t=19.13(1-e^{-0.1963(t+1.5985)})$(雌魚)及 $FL_t=14.23(1-e^{-0.6602(t+0.7192)})$(雄魚)，而體重(g)表示為 $W_t=118.90(1-e^{-0.1963(t+1.5985)})^{2.8972}$(雌魚)及 $W_t=50.44(1-e^{-0.6602(t+0.7192)})^{2.8972}$(雄魚)；本種生殖季在每年的 3-10 月間，而孕卵數在 13,819 至 320,336 粒。本種雌雄魚肥滿度皆在冬末上升，並於 5~6 月達到高峰後開始下降。但肝臟和內臟指數雄魚較無季節變化,雌魚則在產卵期間相對較高,而月別飽食度分析結果則顯示，本種在生殖期間有加強攝食的跡象,故其生殖期間能量的來源除部分來自於肌肉、肝臟與內臟外，亦須靠不斷的攝食而得。

關鍵字：北方三島、日本緋鯉(*Upeneus japonicus*)、漁業生物學

Studies on the fishery biology of Red mullet goatfish *Upeneus japonicas* in surrounding water of Three Northern Isles, Taiwan.

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Fisheries biology of *Upeneus japonicus* in surrounding waters of Three Northern Islet, Taiwan was examined based on samples collected between Aug. 2004 and Jun. 2016. In total, 459 males, 648 females, and 50 undifferentiated individuals were collected. There was no difference found in body weight – fork length relationships for both sexes, the equation is $BW=0.023FL^{2.8972}$. The ring formation was found once per year. The maximum ages estimated for male and female fishes were 7 and 5. The von Bertalanffy growth equations in fork length (cm) and weight (g) estimated by non-liner method were $FL_t=19.13(1-e^{-0.1963(t+1.5985)})$ (for female) and $FL_t=14.23(1-e^{-0.6602(t+0.7192)})$(for male), and $W_t=118.90(1-e^{-0.1963(t+1.5985)})^{2.8972}$(for female), $W_t=50.44(1-e^{-0.6602(t+0.7192)})^{2.8972}$(for male). The spawning season was from March to October, and the fecundity ranged from 13,819 to 320,336. The condition factor (CF) for both sexes started increase after winter, and reached the highest value in May-June period before it dropped to low value again. The seasonal variations in hepatosomatic index (HSI) and visceral index (VI) were less evident for males, but were significantly higher during the spawning season for females. The feeding conditions showed that this species may also increase feeding activity during the spawning season. These results indicated that energy required for spawning in *U. japonicus* may be fueled partially by the reserves in muscle, liver and visceral, and partially from continuous feeding.

Key words: Three Northern Isles, Red mullet goatfish (*Upeneus japonicas*), fishery biology