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Seasonal changes in connectivity routes among larval fish assemblages in a semi-enclosed sea (Gulf of California)

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Seasonal changes in connectivity routes among larval fish assemblages in the northern Gulf of California were studied with connectivity matrices from particletracking with a 3D baroclinic numerical model. Results show strong seasonality in connectivity routes among assemblages according to the seasonal circulation phases. In summer (cyclonic phase), when circulation is dominated by the central cyclonic eddy and the northwestward coastal current on the mainland shelf, particle retention among assemblages after 30 days is high (.55%), and particle dispersión toward the Southern Gulf is low (.17%). Thus recruitment of most fish species must occur near their spawning areas: in June, coastal–demersal species such as *Gobulus crescentalis* and *Etropus crossotus*, and in August, coastal-epipelagic species such as *Opisthonema libertate* and species of the genus *Anchoa*. In winter (anticyclonic phase), when the coastal current is southeastward, particle retention among assemblages is low (.35%), and particle dispersion toward the southern gulf is high (.54%). Therefore, recruitment may occur away from the spawning locations, as suggested by the wide distribution of *Engraulis mordax* (coastal-epipelagic) and *Benthoosema panamense* (mesopelagic). Seasonal changes in connectivity routes show that ocean dynamics must be considered in management and conservation plans for marine ecosystems.

Palabras clave: connectivity routes, producción pesquera, three-dimensional baroclinic model, Body growth, larval fish assemblages

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