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Andrea Bellodi, Pierluigi Carbonara, Kirsteen M. MacKenzie, Blondine Agus, Karen Bekaert, Eleanor S. I. Greenway, Maria C. Follesa, Manfredi Madia, Andrea Massaro, Michele Palmisano, Chiara Romano, Mauro Sinopoli, **Francesca Ferragut-Perello** and Kélig Mahé, 2024.

[Measurement of the Growth of the Main Commercial Rays \(*Raja clavata*](#)

[*Raja brachyura*](#)

[*Torpedo marmorata*](#)

[*Dipturus oxyrinchus*](#)
[\) in European Waters Using Intercalibration Methods](#)

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Abstract: The intercalibration of age readings represents a crucial step in the ageing procedure; the use of different sampling methods, structures, preparation techniques, and ageing criteria can significantly affect age and growth data. This study evaluated the precision and accuracy of ageing for the most important North Atlantic (NA) and Mediterranean (M) ray species, *Raja clavata*

, *Raja brachyura*

, *Torpedo marmorata*

, and

Dipturus oxyrinchus

, through exchange exercises carried out by readers from different laboratories. In addition, growth parameters were estimated from the obtained data. A total of 663 individual batoids were analysed.

R. clavata

and

R. brachyura

samples were obtained from both the NA and the M, while vertebral centra of

T. marmorata

and

D. oxyrinchus

were only available for the M. High reading variability was observed for all four evaluated species in terms of CV, APE, and PA.

D. oxyrinchus

and

T. marmorata

showed relatively slow growth and the von Bertalanffy model with fixed t_0 and Gompertz's model were, respectively, the most precise models for each of these species. In

R. brachyura

, females had a faster growth rate compared to combined sexes. The vbt0p proved the most precise model for describing growth in this species, and no statistical differences were found between the NO and the M. For

R. clavata

, the best-fitting model was the vbt0p for females and males in the NO and for females from the M, while the best-fitting model for males from the M and sexes combined for both areas was log.p. Distinct growth patterns were observed between the two study areas.

Keywords: growth, precision, accuracy, batoids