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## Survey of demersal fishes from southern Saudi Arabia, with five new records for the Red Sea

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### Abstract

During a survey of demersal fishes of the southern Red Sea coast of Saudi Arabia off Jizan, 98 species were collected by trawling. Five of these represent new records for the Red Sea: *Saurida longimanus*, *Dactyloptena gilberti*, *Jaydia novae-guineae*, *Pomadasy maculatus* and *Parapercis maculata*. Additionally a specimen of the rare moray *Gymnothorax reticularis*, previously known from only three specimens, was collected. Records of two species, *Parastromateus niger* and *Pseudorhombus arsius*, that formerly were considered questionable, are confirmed by collection of new voucher specimens. Validity of *Laeops sinusarabici* is confirmed. This study documents parts of the diversity of the demersal fish communities on sandy areas of the southern Red Sea, but also emphasizes that a large proportion of this area has not been explored.

**Key words:** Southern Red Sea, Jizan, Farasan Islands, benthic fishes, trawl fishery, biogeography

### Introduction

The Red Sea coast is characterized by a narrow shelf in the northern part that broadens to the south, both along the African and the Arabian Peninsula coasts. Along its eastern shores, the broadening of the shelf area begins around 200 km south of the city of Jeddah (Saudi Arabia) with the Farasan Banks, reaching a width of more than 120 km further south and continuing until the Strait of Bāb al Mandab, the transition of the Red Sea to the Indian Ocean (Fig. 1). In the middle of this shelf area, centered at about 16°47' N, 41°56' E, the Farasan Archipelago is situated at a distance of 40–100 km from the coastal city of Jizan in southern Saudi Arabia. Water depth in the central area between the coast of the Arabian Peninsula and the Farasan Archipelago mostly ranges from about 20–60 m and the bottom is a mixture of mud and sand sediments of terrigenous and biogenic origin, respectively, and mainly comprises soft sediment habitats (Basaham 2009). The average water temperature in this area ranges from ~27°C in winter to ~31°C in summer (Raitsos *et al.* 2013; period 2001 to 2009). Seasonally varying inflow of nutrient-rich waters from the Gulf of Aden into the southern Red Sea (Smeed 1997) fuels the highest planktonic productivity for the Red Sea in these southern shelf areas (Raitsos *et al.* 2013). High primary production of the region is coupled also with high secondary productivity of exploitable stocks of marine organisms, which in turn support profitable commercial fisheries of demersal fish and penaeid shrimps in the shelf area off Jizan and around the Farasan Archipelago (Morgan 2006a). Most of the commercial fisheries fleet of Saudi Arabia, about 150 vessels, operates in the southern Red Sea out of Jizan, utilizing shrimp and fish trawls as well as purse seine nets (Morgan 2006a). Stocks of demersal species in the shelf area off Jizan and around the Farasan Archipelago are considered fully or already over-exploited (Morgan 2006b). Management measures to manage resource exploitation of shrimp include closed areas, gear restrictions (e.g., maximum vessel size of 20 m length) and closed seasons (Morgan 2006b). The finfish captured by this fishery is of much less commercial interest than shrimp, and hitherto no taxonomic

sampled during this survey. The extrapolation of the species accumulation curve indicates that a doubling of the sampling effort accomplished in this study would probably result in an increase of the total number of demersal species to about 110 species. However, altering the sampling strategy, e.g. by use of nets with smaller codend mesh size might result in a marked shift of the catchability of the trawling gear and thus could be expected to target additional species that have not yet been documented. Nonetheless, the sampling effort exerted here with eleven trawling hauls provides a relatively good overview of the community composition of demersal fishes of the southern Red Sea and has enabled us to document several new records for the Red Sea, including details of taxonomic characteristics. Notwithstanding, a spatially and temporally much more extensive sampling scheme needed to be undertaken in order to address pending questions on the fisheries biology of the targeted species and their ecology.

Finally, our study shows that the largest proportion of the catch collected during this survey, and also presumably during routine fisheries activities in the area using the same type of gear, is not useful for commercial marketing purpose because a high proportion of the catch consisted either of non-marketable fishes or of juveniles of commercial species, which measured less than the marketable size, and often are discarded. For none of the species captured here information on the population dynamics and the effects of fisheries on local stocks has been published so far. The results of the present study highlight the diversity of demersal fish communities in the southern Red Sea and suggest that considerably more effort is needed to provide the necessary knowledge to manage these fisheries. A better understanding of the diversity and quantitative compositions of the benthic fisheries off Jizan certainly is necessary before measures for a sustainable use of this important resource can be designed and implemented.

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