

***Neopomacentrus cyanomos* (Pomacentridae), an Indo-Pacific reef fish at Aruba and Curaçao, southern Caribbean**

***Neopomacentrus cyanomos* (Pomacentridae), un pez arrecifal del Indopacífico, en Aruba y Curazao, sur del Caribe**

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ABSTRACT

In 2021, groups of the Indo-Pacific damselfish *Neopomacentrus cyanomos* were observed on reefs in Aruba, in the southern Caribbean. In 2016, a floating accommodation platform (flotel) used to support offshore petroleum extraction was towed from the southwestern Gulf of Mexico, where the damselfish was widespread and had been recorded on other petroleum platforms, first to Aruba and then to nearby Curaçao. In 2025, this study aimed to investigate whether the flotel transported *N. cyanomos* to those two islands. Previously published underwater videos of the submerged flotel hull, recorded in Curaçao in early 2017, were reviewed. In 2025, an information request was posted on social media for sightings of the damselfish in Curaçao. The 2017 videos showed many *N. cyanomos* living on the underside of the flotel that permanently left Curaçao in August 2017. In 2025, adult *N. cyanomos* were recorded living under a dock in Curaçao, and in 2026, they were replaced by two small fish. These are the most recent sightings of that species in Curaçao. The detection of *N. cyanomos* on the flotel in 2017 in Curaçao, followed by the sightings on the reefs of both islands, five and eight years after the platform passed by Aruba and Curaçao, provides evidence that the species was likely transported via the flotel, resulting in the establishment of a population, at least in Aruba.

Keywords: Non-native marine fish, Greater Caribbean, offshore petroleum platform, Atlantic-wide spread, planktivore

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RESUMEN

En 2021 se observaron grupos del pez damisela del Indopacífico *Neopomacentrus cyanomos* en los arrecifes de Aruba, en el sur del Caribe. En 2016, un hotel flotante (flotel), utilizado para apoyar la extracción de petróleo en alta mar, fue remolcado desde el suroeste del golfo de México, donde ese pez estaba muy extendido y se había registrado su presencia en otras plataformas petroleras, primero hacia Aruba y luego a Curazao. En 2025 investigamos si ese flotel podría haber transportado *N. cyanomos* a esas dos islas. Revisamos vídeos submarinos, publicados anteriormente, del casco sumergido de ese flotel, grabados en Curazao a principios de 2017, y en 2025 lanzamos una solicitud en las redes sociales para recabar información sobre avistamientos de este pez damisela en Curazao. Los vídeos de 2017 revelaron la presencia de muchos *N. cyanomos* viviendo en la parte inferior del flotel, que abandonó Curazao de forma permanente en agosto de 2017. En 2025 se grabaron en vídeo varios adultos de *N. cyanomos* que vivían bajo un muelle en Curazao, a los que sustituyeron dos individuos pequeños en 2026. Estos son los únicos avistamientos recientes de esa especie en Curazao. Su descubrimiento, en el flotel, en 2017, en las dos islas, entre cinco y ocho años después de que la plataforma visitara Aruba y luego Curazao indica que es muy posible que la especie se transportara a ambas islas, lo que condujo al establecimiento de una población, al menos en Aruba.

Palabras clave: Un pez marino no autóctono, Gran Caribe, plataforma petrolera marina, extensión por todo el Atlántico, planctívoro

INTRODUCTION

The first published record in the Atlantic Ocean of the Regal Damsel-fish, *Neopomacentrus cyanomos*, a native of the Indo-West Pacific, was in 2013 in the southwest corner of the Gulf of Mexico. There it was discovered to be common on nearshore coral reefs at Coatzacoalcos, Mexico (González-Gándara & de la Cruz-Francisco, 2014). That same year it was also found on a coral reef on Campeche bank, 350 km from Coatzacoalcos (Robertson *et al.* 2016). By 2017, the species had spread across the northern Gulf

of Mexico and expanded to southern Florida in 2020 (Schofield & Neilson, 2025). While González-Gándara and de la Cruz-Francisco (2014) proposed that *N. cyanomos* had been brought to Coatzacoalcos by cargo ship, Robertson *et al.* (2018) argued that it was more likely transported to that part of the Gulf of Mexico, which has a large, offshore petroleum industry, by items of infrastructure such as drilling platforms moved there in-water from *N. cyanomos*' native range. This hypothesis was supported by the finding of a large population of this species on a defunct, fixed oil-loading platform in

Campeche Bay that was heavily encrusted with sponges and corals, including *Tubastraea* invasive coral (Simoes & Robertson, 2016). In 2019, the Regal Damselfish was found to have a well-established population at Trinidad (Robertson *et al.* 2021a), which has a substantial offshore petroleum industry and a sheltered area in the Gulf of Paria used for the transshipment and in-water storage of mobile offshore petroleum platforms. The Regal Damselfish also occurs on oilfield jackets (fixed production platforms) off the coast of Angola, West Africa (Schramm *et al.* 2025) and on inshore reefs near offshore infrastructure at southeastern Brazil (Melo *et al.* 2025). Further, this damselfish is a dominant component of the fish fauna of oil jackets in its native range (Harvey *et al.* 2021) and Marnane *et al.* (2022) concluded that *N. cyanomos* was able to remain with partly immersed jackets moved up to 200 km in that same area.

To date, the only report of *N. cyanomos* between the southeast corner of the Caribbean and the Gulf of Mexico is that by Schofield & Neilson (2025) of its presence in Aruba, the western-most of the three ABC (Aruba, Bonaire, Curaçao) islands off the northwest coast of Venezuela (Fig. 1). It was observed there in February 2021 by a scientific diver who was familiar with this species in the Gulf of Mexico, although confirmatory voucher photographs were not obtained. That diver recorded five groups each comprising

between 2 and 20 individuals on coral reefs at depths of 15 to 25m on Aruba's southern coast, indicating that there was an established population there (Schofield & Neilson, 2025). Here we present information showing that the Regal Damselfish could have been transported to Aruba and Curaçao by a single offshore petroleum platform that was moved, in-water, from the southern Gulf of Mexico to those islands in 2016, enabling this species to develop an established population in Aruba and, possibly, Curaçao.

MATERIALS AND METHODS

To assess the possibility that the semi-submersible platform *Safe Regency*, which was used as a floating accommodation center (flotel) in support of offshore petroleum extraction, might have carried *Neopomacentrus cyanomos* from the southwest Gulf of Mexico to both Aruba and Curaçao (Fig. 1) we examined the history of the occurrence of both that platform and the damselfish in that part of the Gulf of Mexico and information relating to the usage of offshore oilfield infrastructure by that fish. Further, we determined whether *N. cyanomos* was living on the hull of the Safe Regency soon after its arrival at Curaçao and whether this damselfish was first recorded in island habitats after that platform arrived at both islands.



Fig. 1. Map of the Caribbean Sea showing the locations of Aruba, Curaçao, and Bonaire

Fig. 1. Mapa del mar Caribe en el que se indican las ubicaciones de Aruba, Curaçao y Bonaire

RESULTS

From 1997 to 2016 the *Safe Regency* was based in the Cantarell offshore oilfield in Campeche Bay, in the southwest corner of the Gulf of Mexico. In 2016 it was towed, in-water, from that area first to Aruba, where it arrived in mid-2016 and remained for ~ two months before moving to an inshore anchorage at Curaçao in August 2016. It stayed there at Curaçao till August 2017, when it was towed to Turkey for scrapping. [Hoeksema et al. \(2023\)](#), who summarized *Safe Regency's* history, were able to SCUBA dive on and examine the submerged

parts of that platform in March 2017. They made videos of a dense cover of benthic fouling organisms dominated by invasive Indo-Pacific stony corals of the genus *Tubastraea* ([Hoeksema et al. 2023](#); [Hoeksema et al. 2024a](#)).

DRR became aware of the paper by [Hoeksema et al. \(2023\)](#) in June 2025 and reviewed it for evidence of any association of *N. cyanomos* with the *Safe Regency* in Curaçao. The supplementary materials of that paper included two videos taken of the underside of submerged parts of the platform ([Supplementary videos 1 and 2](#)) and the last 30-45 seconds of each video documented the presence of numerous

individuals of the Regal Damselfish moving about, often inverted, close to the heavily fouled underside.

Neopomacentrus cyanomos has a dark grey body and fins, with a distinctive black “humeral” spot on the side of the body above the base of the pectoral fin and a prominent white spot on the lower rear corner of the dorsal fin. The only native West Atlantic damselfish with which *N. cyanomos* can be confused is the Brown Chromis, *Azurina multilineata*, which also has a grey body and often, although not invariably, a white spot at the lower rear corner of the dorsal fin. However, notable differences distinguish between the two species: (i) whereas the dark grey to blackish body and fins of *N. cyanomos* form an elongate rectangle with a rounded head profile, the pale grey body of *A. multilineata* has a deep, fusiform oval shape, with a pointed head. (ii) Only *N. cyanomos* has a black humeral spot. (iii) The dorsal and anal fins and lunate caudal fin of *N. cyanomos* have noticeably elongate, slender, pointed rear tips whereas the dorsal, anal (particularly) and strongly forked tail fin of *A. multilineata* lack such elongations. Finally, (iv) during relatively low-speed swimming, *A. multilineata* uses sculling motions of its elongate, stiff pectoral fins, whereas *N. cyanomos*, which has soft pectoral fins, employs continuous lateral undulations of the body and caudal fin. These characteristics

in coloration, shape and swimming mode mean that Regal Damselfish can be reliably distinguished from Brown Chromis, as well as other native West Atlantic damselfishes, at a distance.

The finding of *N. cyanomos* on the *Safe Regency* in early 2017 provided an opportunity to assess whether a population had become established in Curaçao eight years later, in 2025. In early June 2025 MJAV posted a notice on the Facebook page of the CARM-ABI research laboratory, which included a video of live *N. cyanomos* in the Gulf of Mexico, that requested photographic documentation of any sightings by local divers in Curaçao ([Supplementary File S3](#)). That Facebook page reaches a local audience of 5,800 people interested in the island’s marine life. In addition, in early July 2025, DRR contacted divers at the Curaçao Sea Aquarium who regularly use both SCUBA diving and the Curasub submersible in maintenance and research activities there and requested documentation of any sightings. As of September 30, 2025, those queries produced only one sighting. That was an incidental observation supported by an underwater video taken by LJVtH, who was aware of the Facebook call for information and recognized fish that he thought were *N. cyanomos*. That video, which he took on July 25, 2025, shows three adults of *N. cyanomos* plus 10 similar sized *A. multilineata* under a defunct, collapsed dock

in front of the CARMABI laboratory at 12.12187°N, -68.96951°W, which is 4.5 km east of the Boca Sami anchorage used by the *Safe Regency* (see Fig. 2 and [Supplementary video S4](#)). A second call for information on the CARMABI Facebook page in December 2025 produced no additional sightings. LJVtH revisited that dock in March 2026 and found that the three adults had been replaced by

two small individuals of *N. cyanomos*. Between the 2025 and 2026 visits to the CARMABI dock he searched for *N. cyanomos* under overhangs at other sites in Curaçao while diving but saw none. To date these observations under the CARMABI dock are the only reports known to us of this species anywhere at Curaçao other than on the *Safe Regency* during its one-year stay at the island.



Fig. 2. Image from a video recorded on July 25, 2025, showing two *Neopomacentrus cyanomos* inverted on the underside of a pier adjacent to the CARMABI laboratory in Curaçao. Both inverted subjects are oriented relative to the inverted substrate, a common behavior also observed in supplementary videos S1 and S2
 Fig. 2. Imagen de un vídeo grabado el 25 de julio de 2025 en el que se ven dos *Neopomacentrus cyanomos* invertidos en la parte inferior de un muelle adyacente al laboratorio CARMABI en Curazao. Ambos individuos están invertidos, orientándose en relación con el sustrato invertido, un comportamiento común que también se observa en los vídeos complementarios S1 y S2

DISCUSSION

Neopomacentrus cyanomos is the only member of its genus recorded to date in the Atlantic. Its presence in the Caribbean has been confirmed by the genetic analyses of specimens collected in Trinidad (Robertson *et al.* 2021b). This species is readily recognizable using its shape, color and swimming mode and visually distinguishable from all native West Atlantic damselfishes. This enabled us to identify this species at Curaçao.

The occurrence of substantial numbers of *N. cyanomos* sheltering amongst a thick accumulation of fouling organisms dominated by invasive *Tubastraea* stony corals on the submerged parts of the *Safe Regency* flotel at Curaçao after it transited there from the southwest Gulf of Mexico provides useful information about the expanding distribution of this species in the West Atlantic. *Neopomacentrus cyanomos* was widespread on reefs in the southwest Gulf for at least several years prior to the departure of the *Safe Regency* to Aruba and Curaçao and was living in abundance on an abandoned oil-loading platform (Simoes & Robertson, 2016) near the *Safe Regency* during that period. The *Safe Regency* was moved to Aruba by being towed at a relatively low speed, which could have contributed to the survival of Regal Damselfish on a voyage of about 2700 km that likely took about two weeks.

The simplest explanation for the arrival of this damselfish at those two islands is that it was brought there in abundance by the *Safe Regency* and either moved from the platform into local habitats or spawned and released larvae that recruited locally. The incidental finding of multiple groups in Aruba five years after a ~two month visit by that flotel indicates that a local population was established there in shallow, leeward coral reefs. At Curaçao the situation is more complicated. The *Safe Regency* spent a year there hosting a large number of *N. cyanomos*, much longer than its stay at Aruba and ample time to seed a local population, yet currently there are very few individuals there in shallow leeward habitats.

When *N. cyanomos* actually arrived at and became established at various West Atlantic sites is an open question and the possibility that other offshore platforms were involved in carrying *N. cyanomos* to both Aruba and Curaçao before and after the 2016-17 visit of the *Safe Regency* to each island cannot be excluded. At Curaçao there were 31 visits of varying durations by 15 semi-submersible platforms other than the *Safe Regency* between 2008 and 2020 (Hoeksema *et al.* 2023). Some of those moved around between widely scattered sites in the west Atlantic where *N. cyanomos* occurs. For example, the flotel *Safe Concordia* moved between the

Gulf of Mexico (2008), Brazil (2015; 2018-19) and Trinidad (2021-22) and anchored at Curaçao in 2010, 2017, 2018 and 2023 (Hoeksema *et al.* 2023). One or more of those visits could have contributed to the occurrence of *N. cyanomos* at Curaçao. Aruba also independently receives extended visits by such platforms, e.g. the *Maersk Developer* semi-submersible drilling platform, which was in the Gulf of Mexico in early 2017 (VesselFinder, 2017) was being serviced in Aruba at the end of 2017 (Semco Maritime, 2018).

Prior to the observations of *N. cyanomos* in Aruba in 2021 there were no records of this species there or at Curaçao and Bonaire, or anywhere between those islands and Trinidad. All three ABC islands have large recreational SCUBA diving communities and longstanding, ongoing research on reef fishes using both SCUBA and, in the case of Curaçao and Bonaire, a crewed submersible based at Curaçao. The finding of an established population of Regal Damselfish at Aruba five years after the *Safe Regency* anchored there for a short visit is consistent with that platform having brought a breeding population on its underside that led to establishment of a population in Aruba. What the population status of *N. cyanomos* currently is at Aruba is unclear as no more information about the situation at that island has been logged into the USGS invasive species site or published since 2021.

On Curaçao, eight years after the *Safe Regency* left, although documentation was requested from a wide range of potential sources of local information, *N. cyanomos* was observed only in a single group of three adults in 2025, replaced by two small individuals at the same location in 2026. Thus, it appears that the arrival of this species at Curaçao has not led to the development of a widespread, persistent population on reefs at that island like populations that occur on reefs in the Gulf of Mexico, Southeast Florida and Trinidad. The existence of small fish nine years after the *Safe Regency* departed indicates that there is a low-density population at Curaçao, perhaps centered in (deeper?) habitats or parts of the island (e.g. the exposed seaward north side) not normally visited by divers. The rarity of *N. cyanomos* there is an anomaly, because it occurs commonly in a range of shallow habitats at other sites in the West Atlantic, including coral and rocky reefs and a variety of artificial habitats at depths between the surface and 60 m and apparently established a readily recognizable population on shallow reefs at nearby Aruba.

The possibility that a larger population at Aruba, 80 km west of Curaçao, has seeded the few individuals found recently on Curaçao is unlikely because the prevailing ocean current in the area of the ABC islands, the Caribbean Current, flows

northwestwards from Curaçao and Bonaire, which are upstream from Aruba and most likely tend to contribute larvae to Aruba rather than vice versa (Bertoncelj *et al.* 2025). There are no indications that *N. cyanomos* is present at Bonaire, 50 km east of Curaçao. That island, which does not have platform storage and maintenance facilities like those on Aruba and Curacao, apparently does not represent a source to seed Curaçao either.

Biofouling on platforms likely has also been a vector for the recent settlement of a non-native *Tubastraea* species on harbor infrastructure at Curaçao (Hoeksema *et al.* 2024b), of a non-indigenous worm-snail, *Petalconchus* sp. found in association with *Tubastraea* corals collected at Aruba in 1955 (Hoeksema *et al.* 2025) and with various other reef coral species observed in Bonaire and Curaçao since 2014 (Hoeksema *et al.* 2022; Hoeksema *et al.* 2023; van der Schoot & Hoeksema, 2025). These occurrences support the hypothesis that both the Regal Damselfish and benthic fouling organisms are being spread throughout the Atlantic by in-water movements of floteles and drilling and production platforms, and possibly other infrastructure used in offshore petroleum industry, including floating drilling and production vessels, floating storage and offloading units, floating production units and specialized barges and support vessels of various types. However,

the complexity of geographic and temporal dynamics of relocation of such infrastructure makes identification of sources and the timing of non-native species relocations in the West Atlantic extremely difficult to resolve.

Will *N. cyanomos* have negative effects on local reef-fish faunas at Curaçao and Aruba? There is no information about the current abundance of this non-native planktivorous species in Aruba, while the population at Curaçao seems to be far too small to have any significant impact on the local fish fauna. Only time will tell what the population trajectories of this species will be at those two islands. On coral reefs at Veracruz, Mexico, the population of *N. cyanomos*, although widespread and distinctly more abundant than at Curaçao, had not reached a level at which there was any measurable impact on native planktivorous fishes seven years after it was first detected on those reefs (Rivera-Higuera *et al.* 2025).

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SUPPLEMENTARY MATERIALS

Supplementary Videos S1 & S2. Taken at Curaçao in March 2017 (see Hoeksema *et al.* 2023) showing

encrustation of fouling organisms dominated by *Tubastraea* hard corals on the underside of the submerged parts of the flotel platform *Safe Regency*. At the end of each video, numerous *Neopomacentrus cyanomos*, many inverted, are visible moving about close to the fouled substratum.

S1. <https://ars.els-cdn.com/content/image/1-s2.0-S00253-26X23007889-mmc5.mp4>

S2. <https://ars.els-cdn.com/content/image/1-s2.0-S00253-26X23007889-mmc6.mp4>

Supplementary File S3. Notice on Facebook page of CARMABI research laboratory in June 2025 requesting documentation of sightings of *Neopomacentrus cyanomos* at Curaçao. <https://www.facebook.com/share/p/1CK6jRcfCX/>

Supplementary Video S4. Taken by Lars Van ter Horst on July 25, 2025, this video shows three adults *Neopomacentrus cyanomos* plus 10 *Azurina multilineata* under a defunct dock in front of the CARMABI research station at Curaçao. <https://zenodo.org/records/17227490>

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