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# EMPIDONAX THE “GNAT MASTER”

## 5 EASTERN EMPIDS PART 2: STRUCTURE

*“WHEN LIFE ITSELF SEEMS LUNATIC,  
WHO KNOWS WHERE MADNESS LIES?”*

MIGUEL DE CERVANTES SAAVEDRA, *DON QUIXOTE*



# HEAD & BODY PROPORTIONS

# EASTERN EMPID BODY PROPORTIONS

## INCREASING BODY SIZE



**Least**



Photo by Michael Bolte

**Yellow-bellied**



Photo by Dan Jones

**“Trails”**

**Willow/Alder**



Photo by Brendan Klick

**Acadian**



Photo by Joseph Mileyka

**Eastern  
Wood-pewee**



Photo by Herman Riverol

# Least

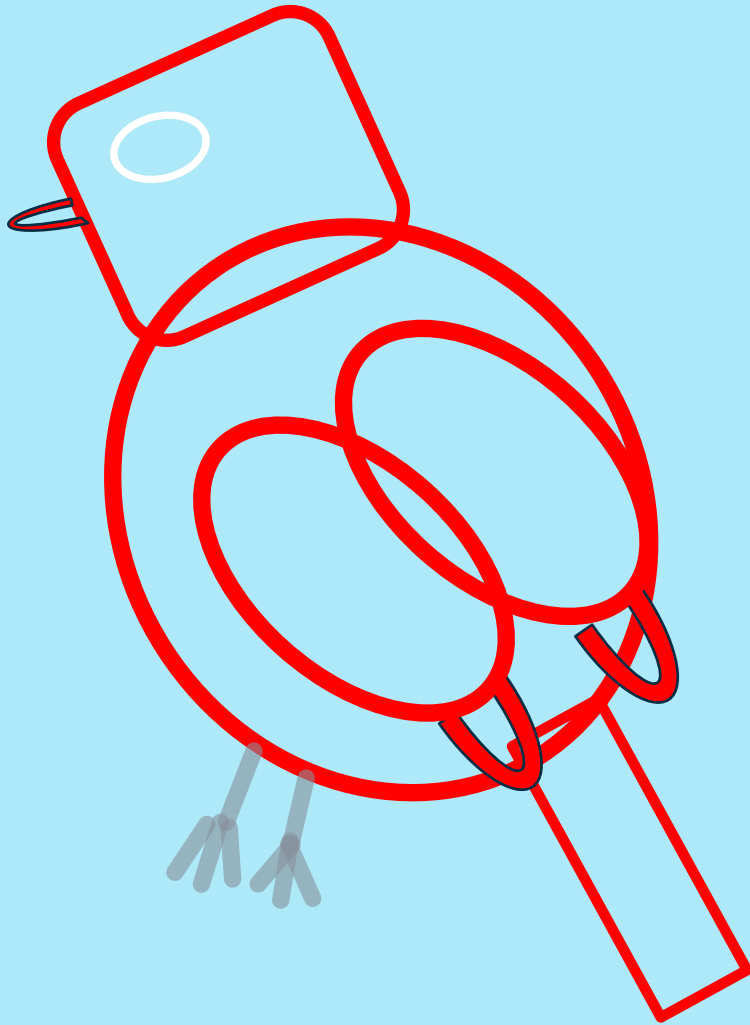


Photo by Ian Davies

# Least

Big-headed look?

Primary extension?



Photo by Ian Davies

What questions  
will Jeff be asking  
his own self?

Small and short-  
winged?



Photo by Kevin Metcalf

How long is the  
bill?

Eye-ring?



Photo by Denny Swaby

# Least



Photo by Zeke Smith



Photo by Janet Rathjen



Photo by Juan Miguel Artigas Azas



Photo by Denny Swaby

Least



# LEAST



Least

Photo by Juan Miguel Artigas Azas



Least

Photo by Henry Trombley



Least

Photo by Janet Rathjen

# YELLOW-BELLIED HEAD & BODY STRUCTURE

# LEAST VS YELLOW-BELLIED



Least



Yellow-bellied

# LEAST VS YELLOW-BELLIED



Least



Yellow-bellied

# LEAST VS YELLOW-BELLIED

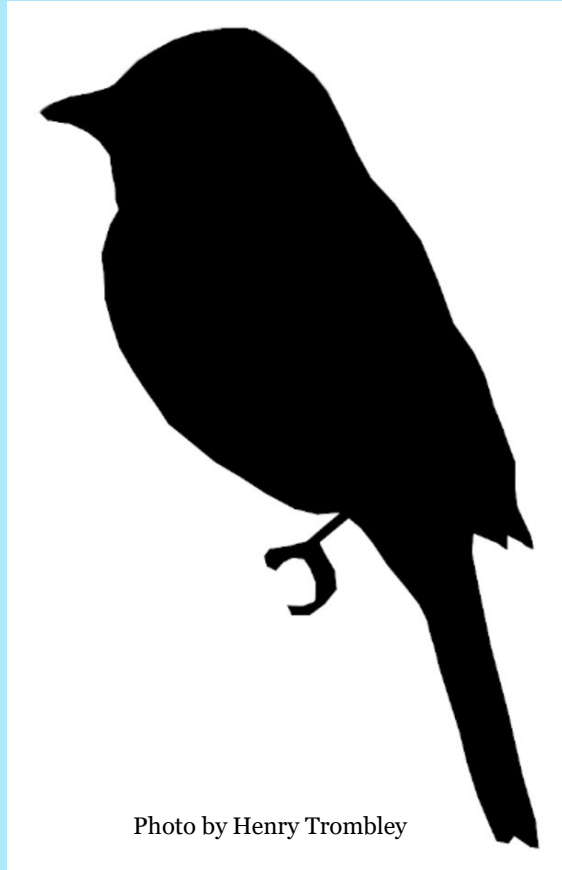


Least



Yellow-bellied

# LEAST VS YELLOW-BELLIED



Least



Yellow-bellied

# Yellow- bellied



Photo by Jon Cormorant



Photo by Sue Barth



Photo by Daniel Irons

# Yellow- bellied





# ACADIAN HEAD & BODY STRUCTURE

# LEAST VS ACADIAN



Least



Acadian

# LEAST VS ACADIAN



Least



Acadian

# LEAST VS ACADIAN



Least



Acadian

# LEAST VS ACADIAN



Photo by Henry Trombley

Least



Photo by James Bozeman

Acadian



Photo by Oscar Wilhelmy



Photo by Ian Gardner



Photo by Jeff Stacy

Acadian



# Acadian



Photo by Tammy McQuade



Photo by Joe Wing



Photo by Louis Trinchon

# **“TRAILS” (ALDER) HEAD & BODY STRUCTURE**



# LEAST VS “TRAILS”



Photo by Henry Trombley

Least



Photo by Scott Stafford

“Trails”  
(Alder)

# LEAST VS “TRAILS”



Least



“Trails”  
(Alder)

# LEAST VS “TRAILS”



Least



“Trails”  
(Alder)

# LEAST VS “TRAILS”

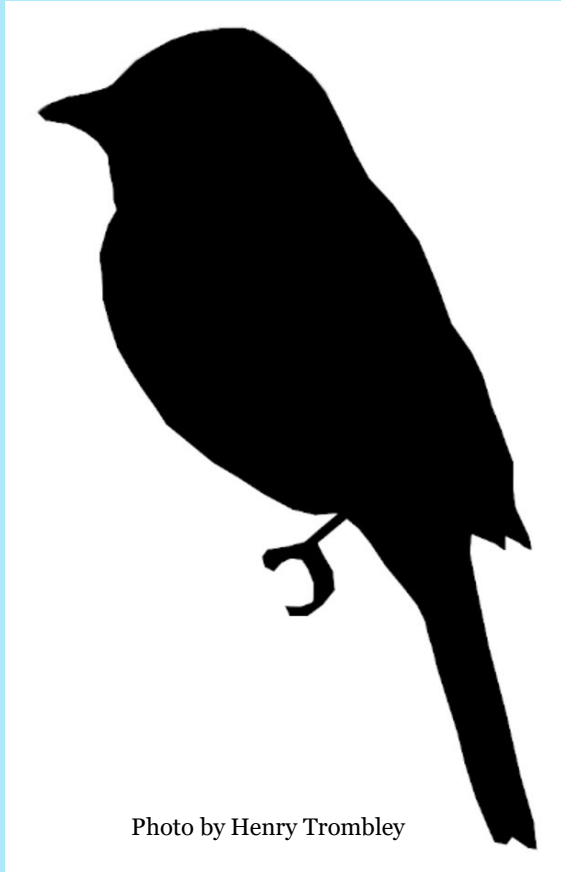


Photo by Henry Trombley

Least

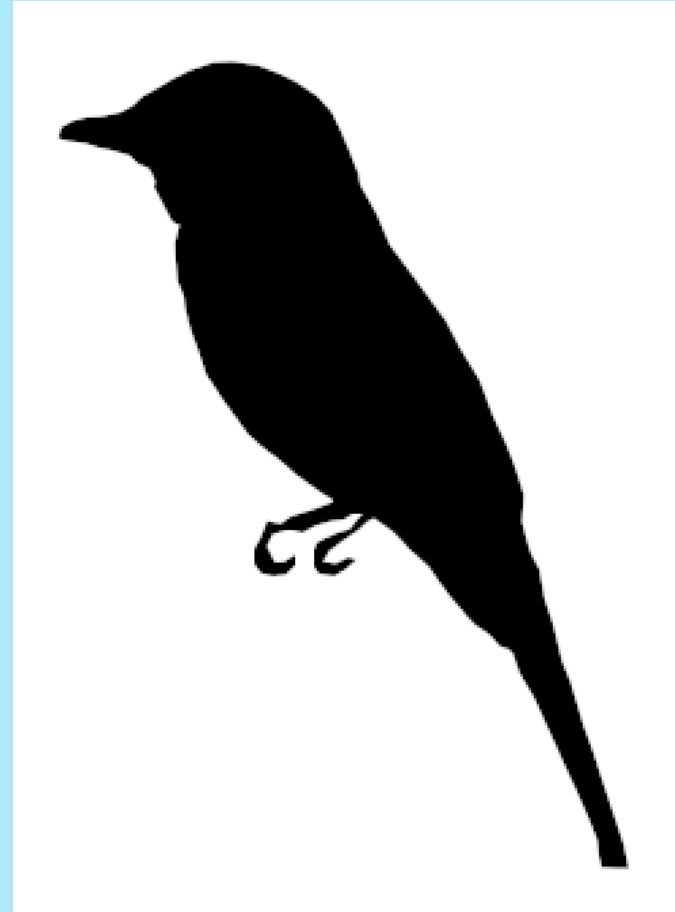
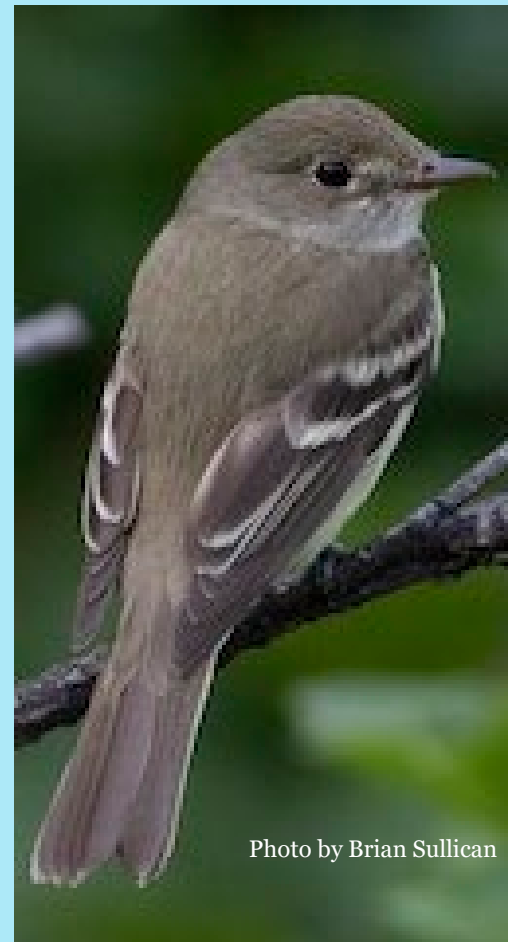


Photo by Scott Stafford

“Trails”  
(Alder)

# “Trails” (Alder)



# “Trails” (Alder)



Photo by Jeff Dyck



Photo by Mark Dennis



Photo by David Dowell

# **“TRAILS” (WILLOW)**

## **HEAD & BODY STRUCTURE**



# “Trails” (Willow)



Photo by Ryan Sanderson



Photo by Eric Michael



Photo by Ed McGhee



# “Trails” (Willow)

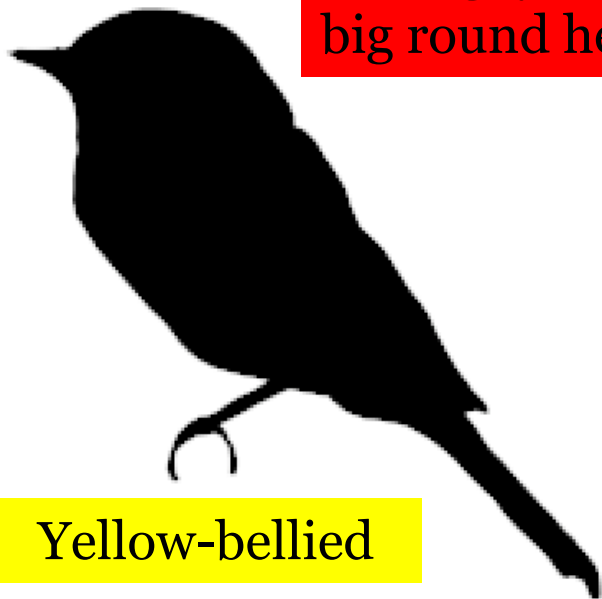




Least

Photo by Henry Trombley

Little guys with  
big round heads



Yellow-bellied

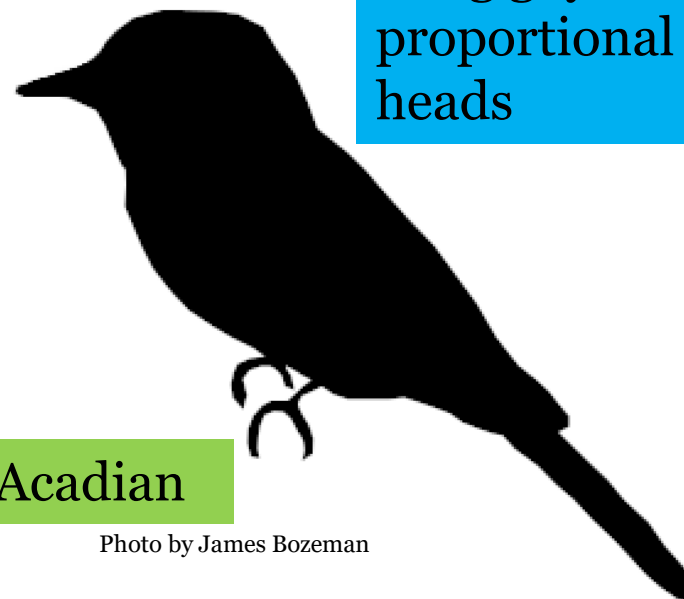
Photo by Brian Sullivan



“Trails”

Photo by Scott Stafford

Long guys with  
proportional  
heads



Acadian

Photo by James Bozeman

# EMPID EXERCISE 3

## HEAD & BODY PROPORTIONS

PUT A NAME WITH EACH  
EASTERN EMPID

(5 PIX ON PAGE A  
5 PIX ON PAGE B)

# Empid Exercise 3 (Group A)



# Empid Exercise 3 (Group A) Answers



1 “Trails”

Photo by Keith Lowe



Photo by Luke Seitz

2 Acadian

4 “Trails”



5 Least



Photo by Bob Bowers

3 Yellow-bellied



Photo by Brendon Klick



6



Photo by David Turgeon

# Empid Exercise 3 (Group B)

7



Photo by Richard Klauke

9



Photo by Jordan Roderick

8



Photo by Roger Beardmore

10



Photo by  
Karla Treinen

6 Yellow-  
bellied



Photo by David Turgeon

# Empid Exercise 3 (Group B) Answers

7 “Trails”

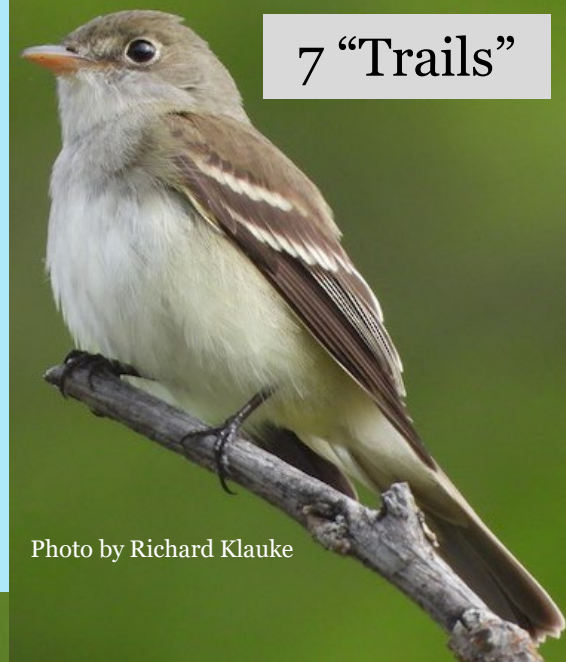


Photo by Richard Klauke

10 Least



Photo by  
Karla Treinen

9 Acadian

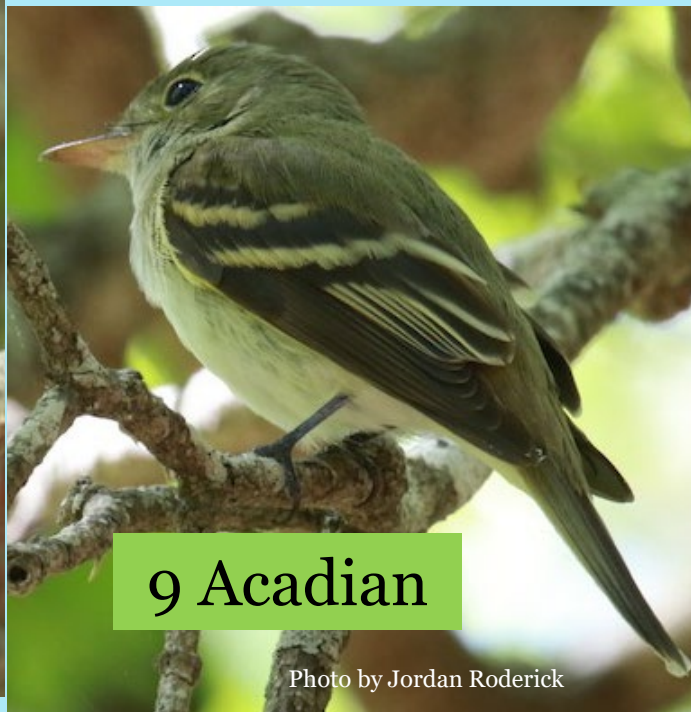


Photo by Jordan Roderick

8 “Trails”



Photo by Roger Beardmore

# WING PROPORTIONS & SHAPE



# WING PROPORTIONS

## Wing Proportions

### Primary projection

Short

Medium

Long

### Tail length (impression of affected by primary projection)

Short

Long

### Tail width

Wide

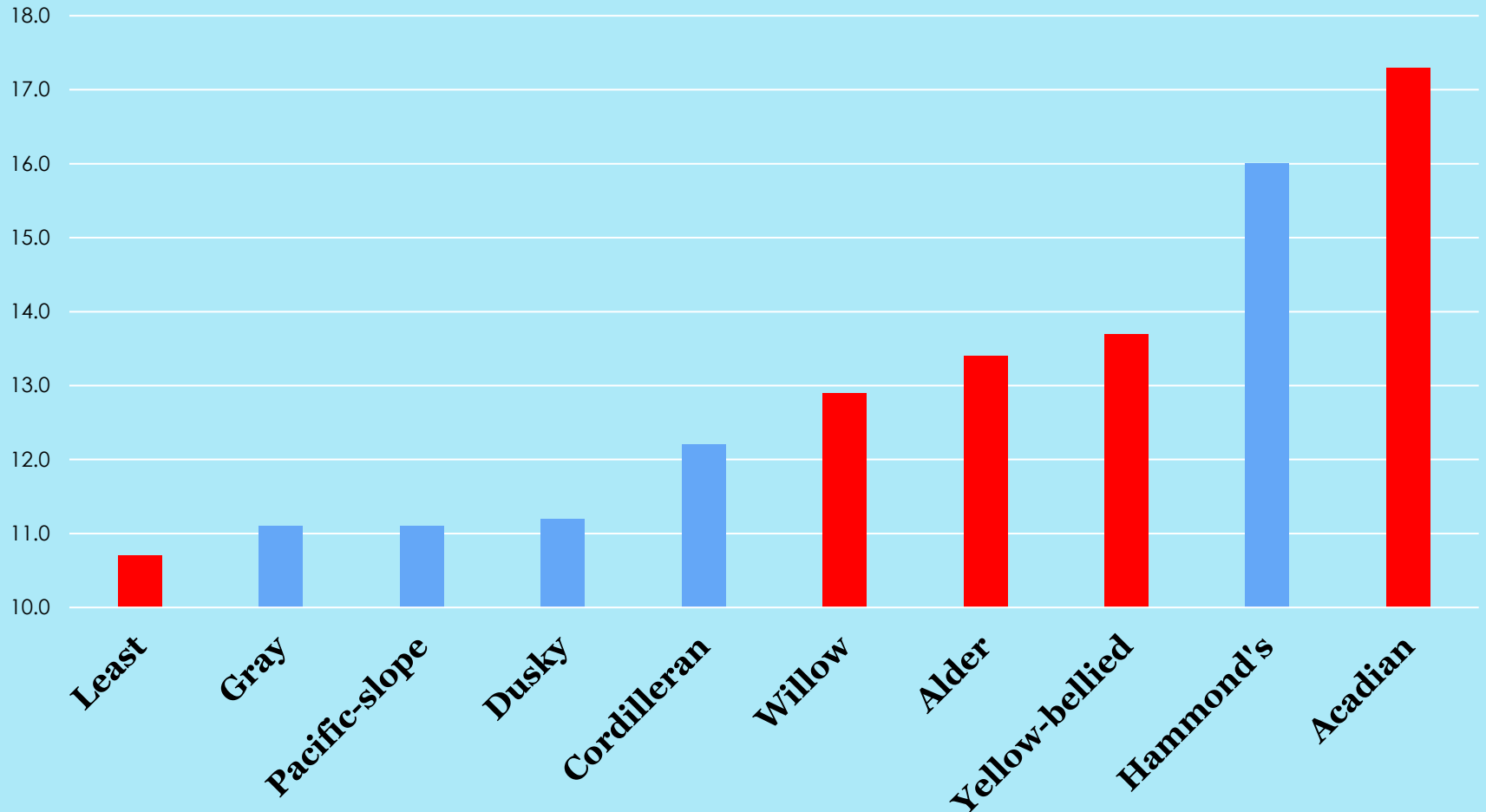
Narrow

Parallel-sided

Narrower at base

### Tail notch

# Empid Primary Projection (mm)

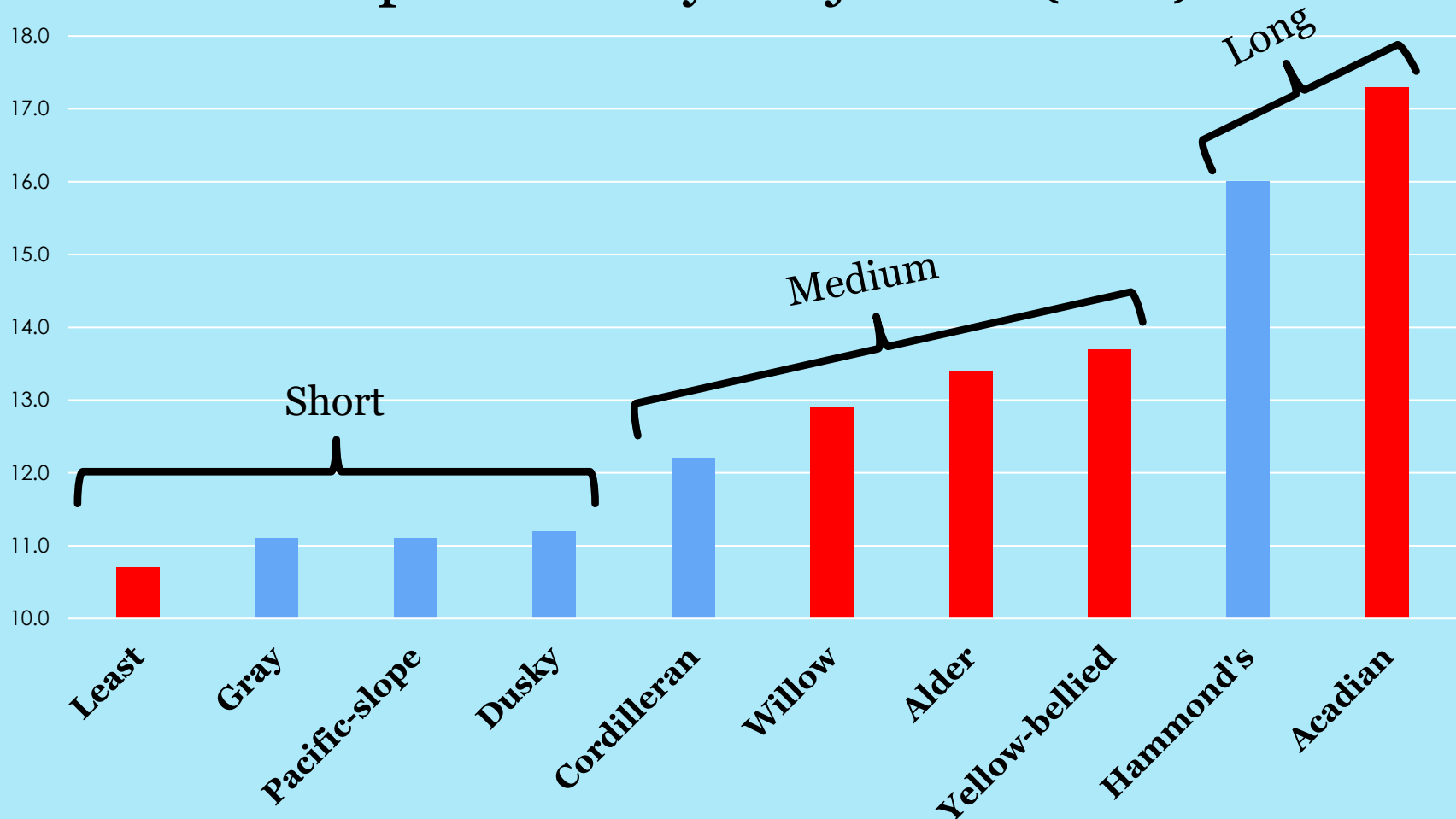


Eastern Empid

Western Empid

Data from: *The Ratio Effect*, by Forrest Rowland, Birding Magazine, March 2009

# Empid Primary Projection (mm)



Eastern Empid

Western Empid

Data from: *The Ratio Effect*, by Forrest Rowland, Birding Magazine, March 2009

# PRIMARY PROJECTION COMPARISON

## *INCREASING PRIMARY PROJECTION*

**Least**  
Short

**Yellow-bellied**  
Short to Medium

**Willow/Alder**  
Medium

**Acadian**  
Long

**Eastern  
Wood-pewee**  
Very long

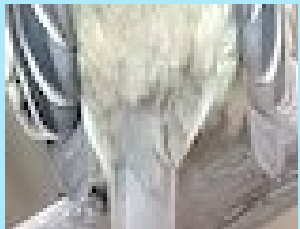


Photo by Kyle Tansley

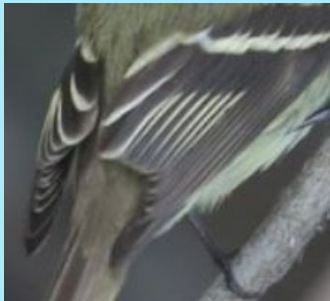


Photo by Andrew Orgill

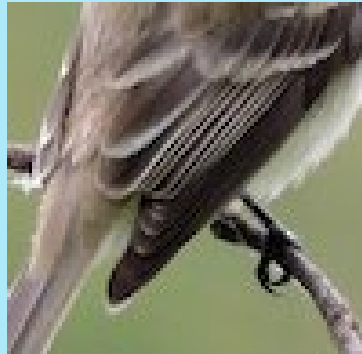


Photo by Daniel Casey

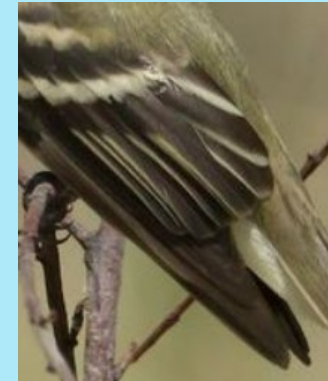


Photo by Joseph Mileyka

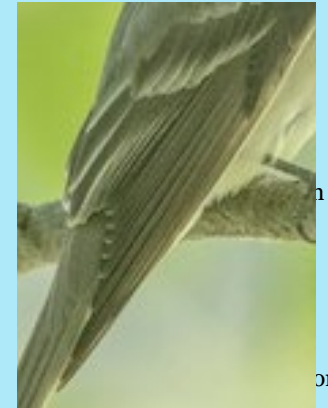


Photo by Brendan Klick

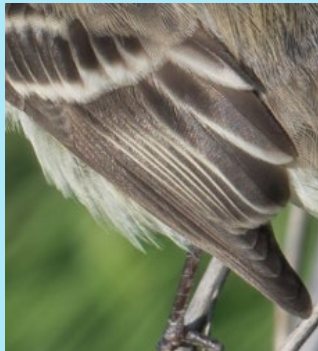


Photo by Michael Bolte



Photo by Dan Jones

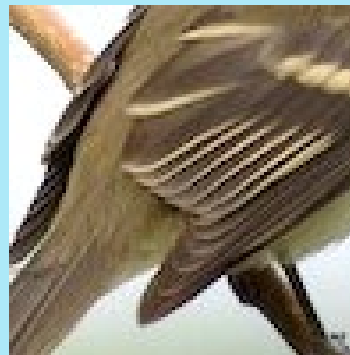


Photo by Tom Johnson



Photo by Doug Hitchcox

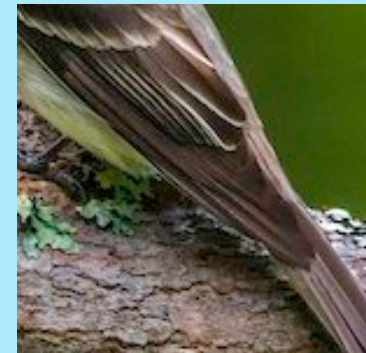


Photo by Jim Carrol

# PRIMARY PROJECTION COMPARISON

## *INCREASING PRIMARY PROJECTION*



**Least**  
Short

**Yellow-bellied**  
Short to Medium

**Willow/Alder**  
Medium

**Acadian**  
Long

**Eastern  
Wood-pewee**  
Very long

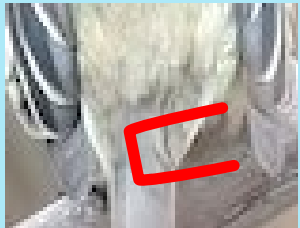


Photo by Kyle Tansley

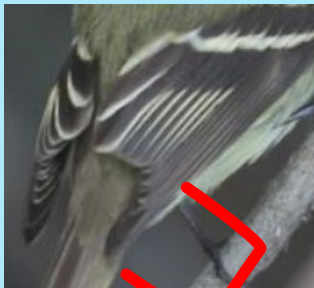


Photo by Andrew Orgill

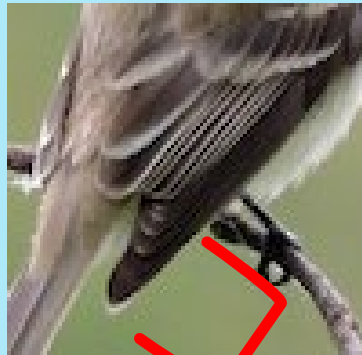


Photo by Daniel Casey

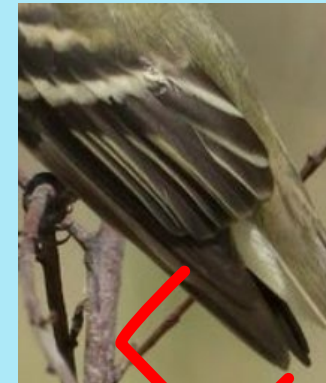


Photo by Joseph Mileyka



Photo by Brendan Klick

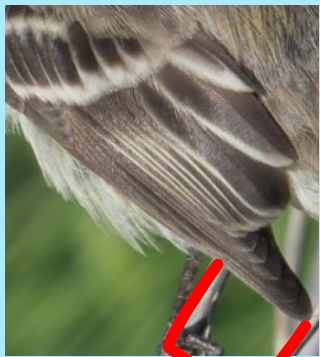


Photo by Michael Bolte

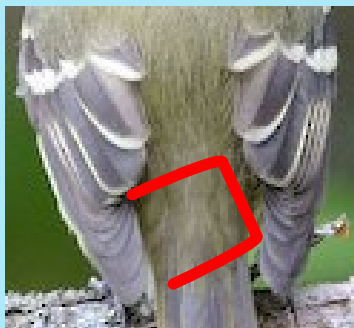


Photo by Dan Jones



Photo by Tom Johnson



Photo by Doug Hitchcox

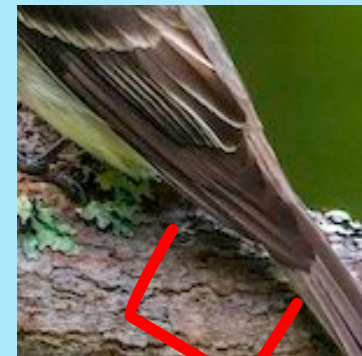


Photo by Jim Carrol

# PRIMARY PROJECTION – LEAST



Photo by Kyle Tansley

Short primary projection.

Short wings – barely project to base of tail.



Photo by Ian Davies

# PRIMARY PROJECTION – LEAST



Photo by Andrew Johnson

Short primary projection.

Short wings – barely project to base of tail.

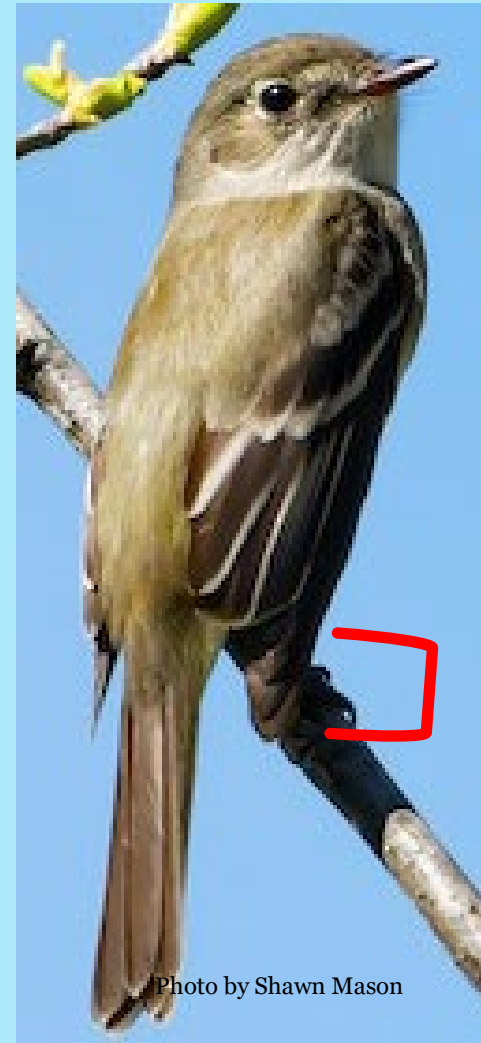


Photo by Shawn Mason

# PRIMARY PROJECTION – YELLOW-BELLIED



Photo by Andrew Orgill

Relatively long  
wings.  
Short to  
moderate  
primary  
projection.



Photo by Dan Jones



# PRIMARY PROJECTION – YELLOW-BELLIED



Photo by Jeremiah Tremble

Relatively long  
wings.  
Short to  
moderate  
primary  
projection.

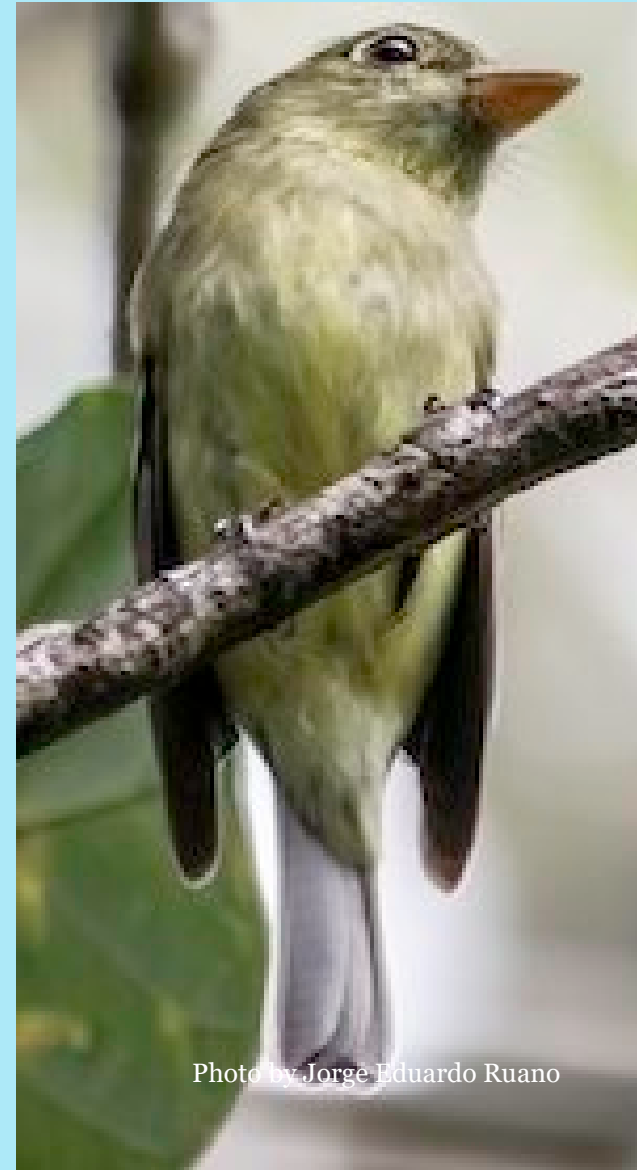


Photo by Jorge Eduardo Ruano

# PRIMARY PROJECTION – YELLOW-BELLIED



Photo by Paul Suchanek

Relatively long  
wings.  
Short to  
moderate  
primary  
projection.



Photo by Jacob Collison

# PRIMARY PROJECTION – ACADIAN



Long primary projection.  
Long-winged.

# PRIMARY PROJECTION – ACADIAN



Photo by Van Remson

Long primary  
projection.  
Long-winged.

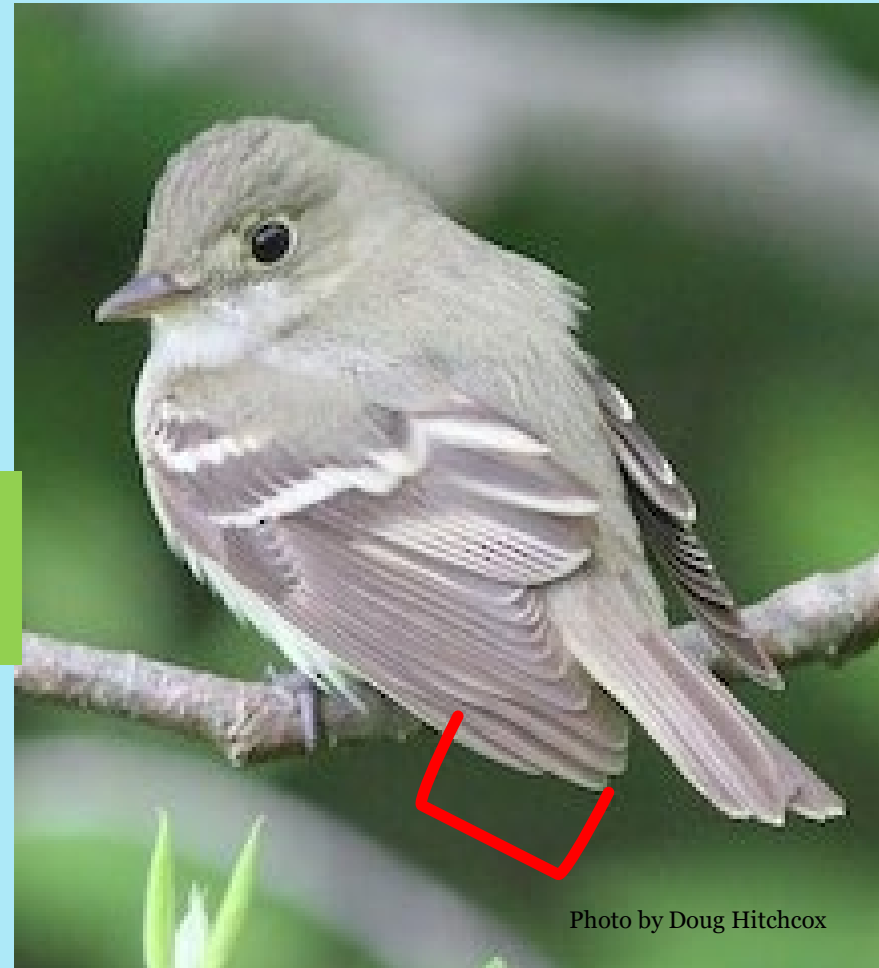


Photo by Doug Hitchcox

# PRIMARY PROJECTION – ACADIAN

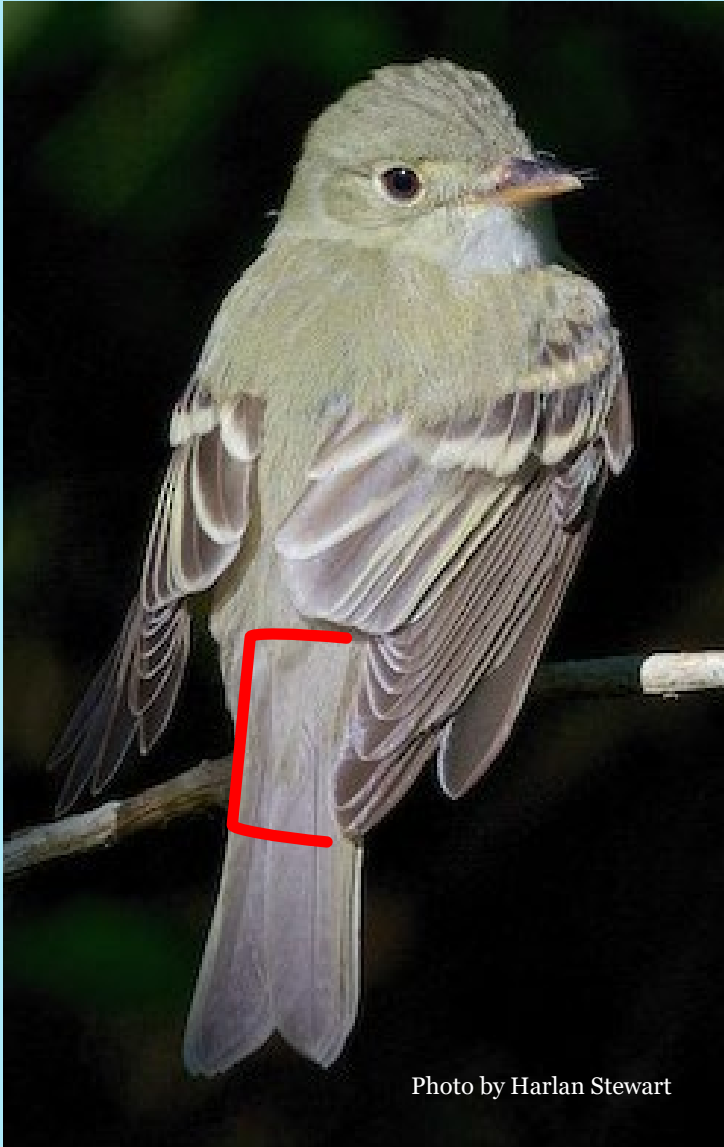


Photo by Harlan Stewart

Long primary projection.  
Long-winged.

# PRIMARY PROJECTION – WILLOW



Moderate  
primary  
projection.



# PRIMARY PROJECTION – WILLOW



Photo by Kyle Blaney

Moderate  
primary  
projection.



Photo by Brad Wood

# PRIMARY PROJECTION – WILLOW



Photo by Brendan Klick

Moderate  
primary  
projection.



# PRIMARY PROJECTION – ALDER



Photo by Tim Atanaitis

Moderate  
primary  
projection.



Photo by Brian Sullivan

# PRIMARY PROJECTION – ALDER



Photo by Jeff Chapman

Moderate  
primary  
projection.



Photo by Jeff Dyck

# PRIMARY PROJECTION – ALDER

Moderate  
primary  
projection.



Photo by Tom Johnson

ANOTHER CLUE:  
**SHAPE OF PRIMARY TIPS**

# ANOTHER CLUE

## SHAPE OF PRIMARY TIPS

**Least**



**Acadian**



# ANOTHER CLUE: **SHAPE OF PRIMARY TIPS**

**Least**



Photo by Jeremiah Trimble

**Acadian**

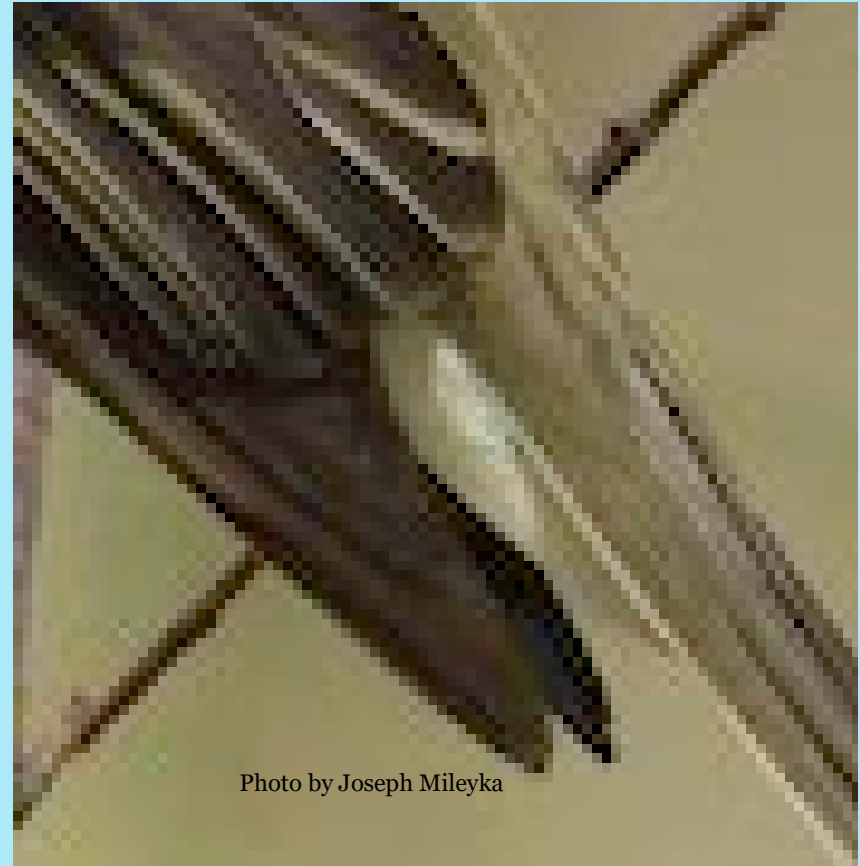


Photo by Joseph Mileyka

# EXERCISE 4: PRIMARY PROJECTION

(EACH PAGE = 3 PHOTOS, 1 SPECIES)



# EXERCISE 4: PRIMARY PROJECTION – SPECIES 1



Photo by Jeremiah Tremble



Photo by Robert Johnson

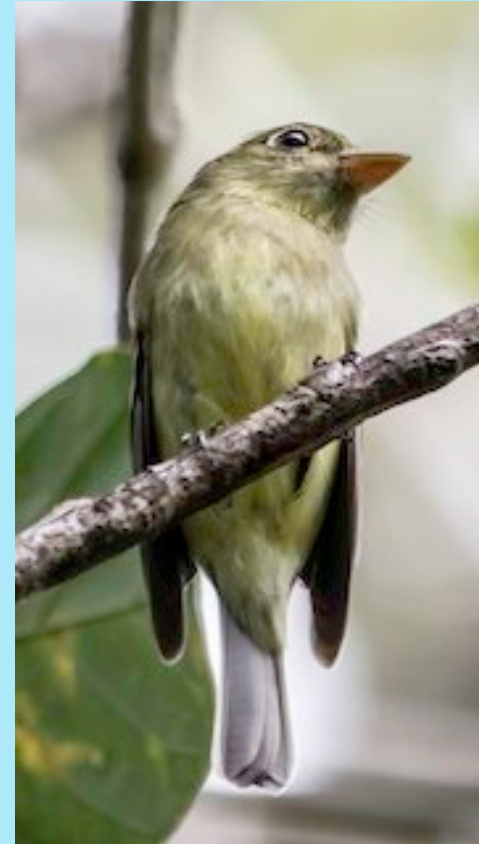


Photo by Jorge Eduardo Ruano

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 2



Photo by Brendon Klick



Photo by Joe Wing



Photo by Daniel Casey

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 3



Photo by Kyle Tansley



Photo by Diane St Jaques



Photo by Malcom GOLD

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 4



Photo by Robb Bell



Photo by Jeff Chapman



Photo by Brian Sullivan

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 5



Photo by James (Jim) Holmes



Photo by Van Remson



Photo by Dan Vickers



# EXERCISE 4: PRIMARY PROJECTION – SPECIES 1 – YELLOW-BELLIED



Photo by Jeremiah Tremble



Photo by Robert Johnson

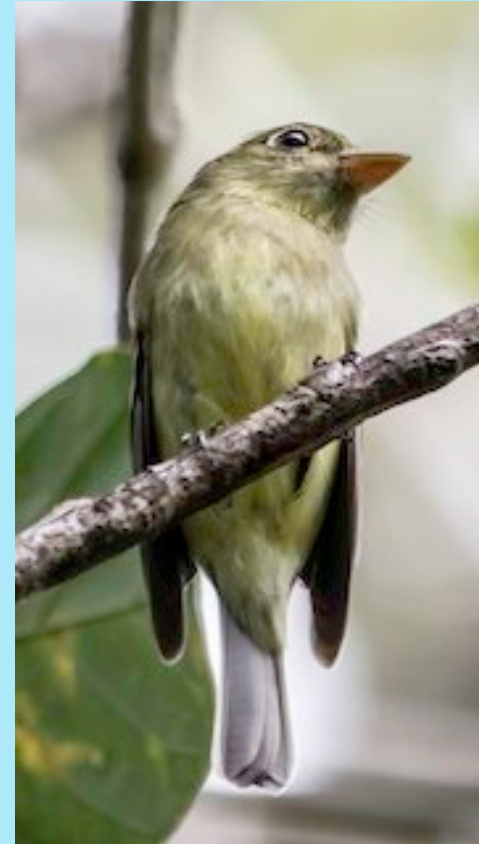


Photo by Jorge Eduardo Ruano

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 2 – “TRAILS” (WILLOW)



Photo by Brendon Klick



Photo by Joe Wing



Photo by Daniel Casey



# EXERCISE 4: PRIMARY PROJECTION – SPECIES 3 – LEAST



Photo by Kyle Tansley



Photo by Diane St Jaques



Photo by Malcom GOLD

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 4 –“TRAILS” (ALDER)



Photo by Robb Bell



Photo by Jeff Chapman



Photo by Brian Sullivan

# EXERCISE 4: PRIMARY PROJECTION – SPECIES 5 – ACADIAN



Photo by James (Jim) Holmes



Photo by Van Remson



Photo by Dan Vickers

# TAIL PROPORTIONS & SHAPE

## 1. Tail Proportions

a) Length (affected by primary projection)

i. Short

ii. Long

b) Width

i. Wide

ii. Narrow

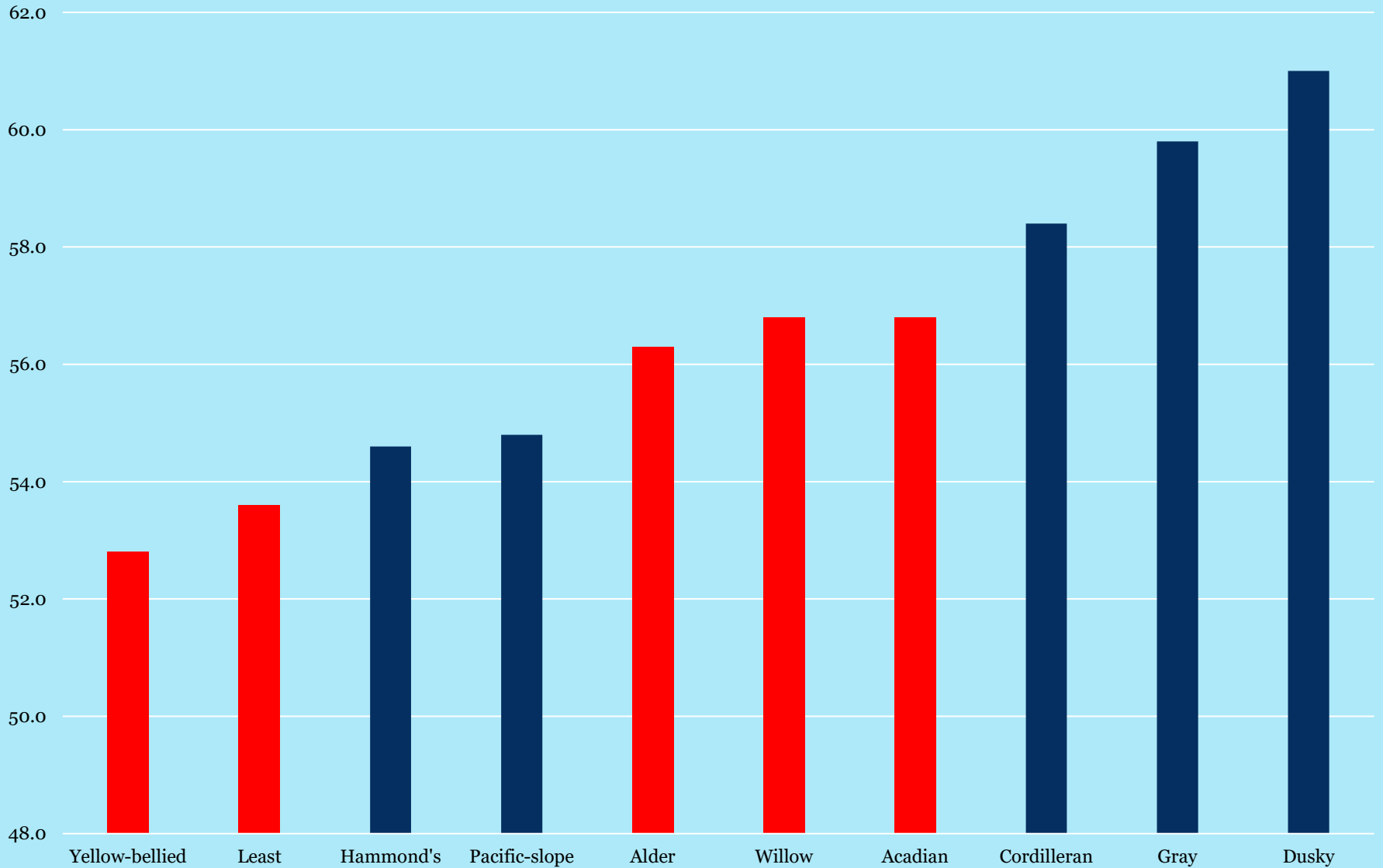
c) Shape

a) Parallel sides

b) Tapered at base

d) Tail notch

# Empid Tail Length (mm)

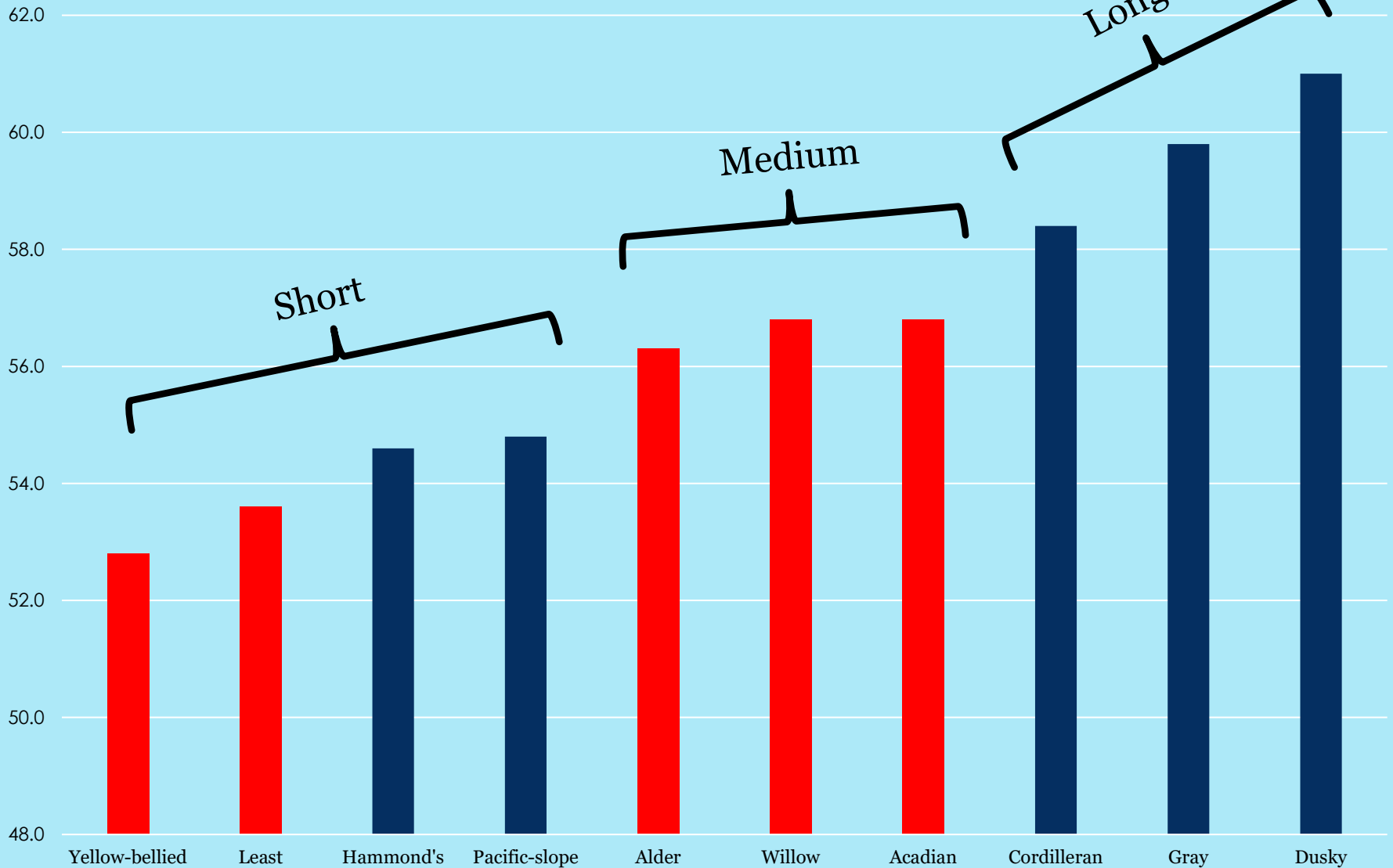


Eastern Empid

Western Empid

Data from: *The Ratio Effect*, by Forrest Rowland, Birding Magazine, March 2009

# Empid Tail Length (mm)



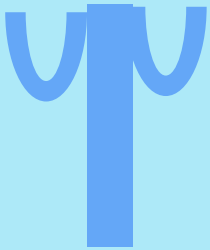
Eastern Empid

Western Empid

Data from: *The Ratio Effect*, by Forrest Rowland, Birding Magazine, March 2009

# EASTERN EMPID TAILS

Least



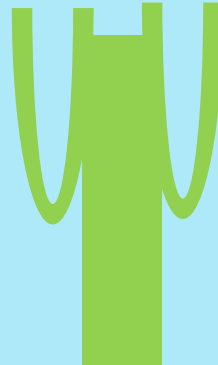
Short, narrow tail.  
Reminiscent of a popsicle stick.

Yellow-bellied



Short narrow tail is constricted at the base rather than parallel sided.

Acadian



Medium length. Broad at the base & nearly parallel sided. May appear relatively short due to the long primary projection.

“Trails”



Medium to longish tail. Broad-based & nearly parallel sided. Looks noticeably broad compared to the tails of smaller Empids.



# EASTERN EMPID TAILS

Least

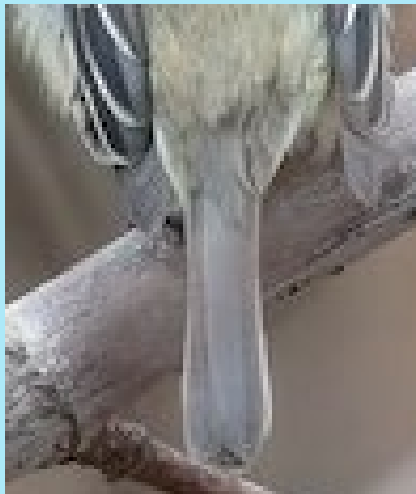


Photo by Kyle Tansley

Yellow-bellied



Photo by John Kendall

Acadian

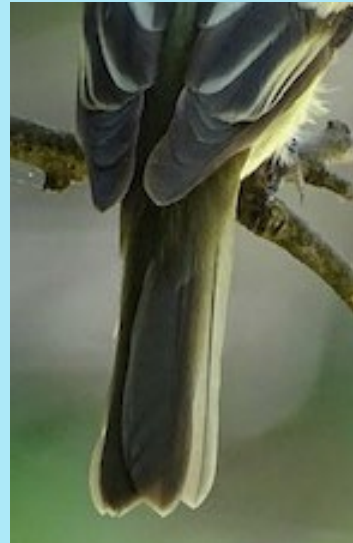


Photo by Jim Sweeney

“Trails”

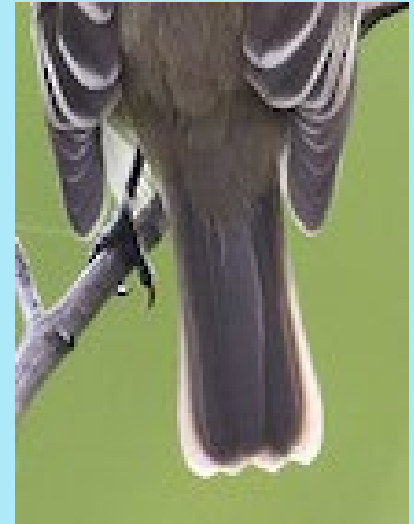


Photo by Joe Wing

Short, narrow tail.  
Reminiscent of a popsicle stick.

Short narrow tail is constricted at the base rather than parallel sided.

Medium length. Broad at the base & nearly parallel sided. May appear relatively short due to the long primary projection.

Medium to longish tail. Broad-based & nearly parallel sided. Looks noticeably broad compared to the tails of smaller Empids.

# TAIL PROPORTIONS – LEAST



Photo by Kyle Tansley

Short, narrow tail.  
Reminiscent of a  
popsicle stick.

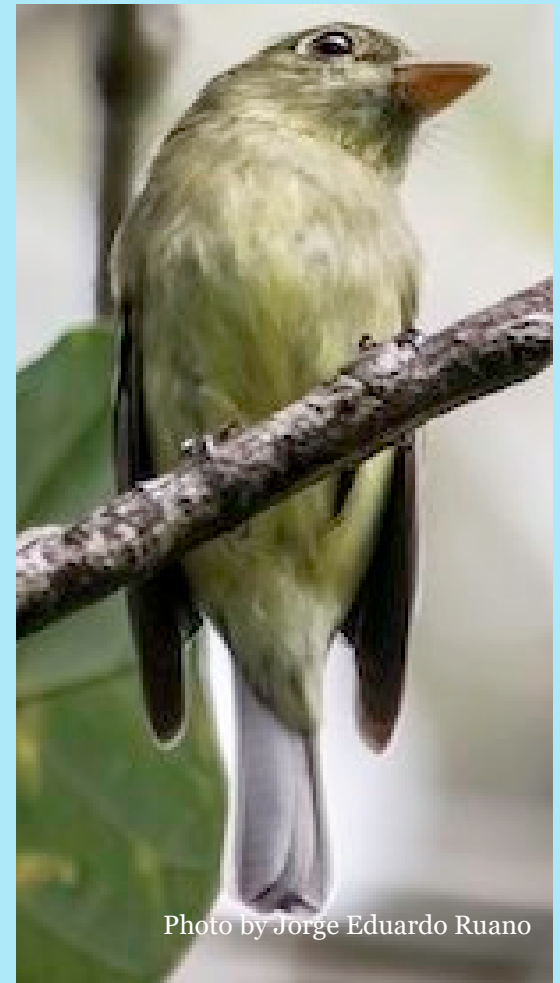


Photo by Ian Davies

# TAIL PROPORTIONS— YELLOW-BELLIED



# TAIL PROPORTIONS– YELLOW-BELLIED



# TAIL PROPORTIONS— YELLOW-BELLIED



# TAIL PROPORTIONS— YELLOW-BELLIED



Photo by Steve Tucker

# TAIL PROPORTIONS— ACADIAN



Medium length tail.  
Broad at base & nearly parallel sided.  
May look short due to long primary projection.



# TAIL PROPORTIONS– ACADIAN



Photo by Harlan Stewart

Medium length tail.

Broad at base & nearly parallel sided.

May look short due to long primary projection.

# TAIL PROPORTIONS— “TRAILS” (WILLOW)



Photo by Brendan Klick

Moderately long, broad-based and parallel-sided – a sturdy tail.

**Other Empids** have narrow-based tails and slight to moderate flaring.

# TAIL PROPORTIONS— “TRAILS” (WILLOW)



Photo by Kyle Blaney

Moderately long, broad-based and parallel-sided – a sturdy tail.

**Other Empids** have narrow-based tails and slight to moderate flaring.



Photo by Brad Wood

# TAIL PROPORTIONS— “TRAILS” (ALDER)

Moderately long, broad-based and parallel-sided – a sturdy tail.

**Other Empids** have narrow-based tails and slight to moderate flaring.



Photo by Brian Sullivan

# TAIL PROPORTIONS— “TRAILS” (ALDER)



Photo by Jeff Chapman



Photo by Jeff Dyck

Moderately long, broad-based and parallel-sided – a sturdy tail.

**Other Empids** have narrow-based tails and slight to moderate flaring.

# THE EMPID CHECKLIST

## FIELD MARKS (ATTRIBUTES)

EMPIDONAX CHECKLIST:				
#	ATTRIBUTE			Rank
1	Structure	Wings	Wing proportions (wing length & primary projection)	A
2			Shape of primary tips	
3		Tail	Tail proportions & shape	B
4			Bill size, shape & color(s)	A
5		Head	Head shape & proportion to body	A
6			Crown of head (peak, crest)	
7			Forehead slope	
8		Body	Body shape	A
9	Plumage		Eye-ring	A
10			Wing-bars	
11			Throat color & contrast	B
12			Color of upper parts	B
13			Color of lower parts	B
14			Molt	
15	Other		Habitat/Micro-habitat	
16			Behavior	
17			Song	A'
18			Call	B
19			Migration	
20			Similar species	

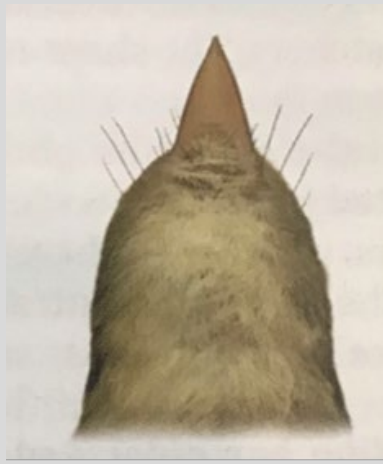
# EASTERN EMPID BILLS

All photos from:  
*Kaufman Field Guide to Advanced Birding*  
*Understanding What you See and Hear*  
Kaufman, Kenn, 2011

INCREASING BILL SIZE



Least



Yellow-bellied



“Trails”



Acadian



# EASTERN EMPID BILLS

All photos from:  
*Kaufman Field Guide to Advanced Birding*  
*Understanding What you See and Hear*  
Kaufman, Kenn, 2011

INCREASING BILL SIZE



Photo by Jeffrey E. Patterson

Least



Photo by Robert Johnson

Yellow-bellied



Photo by Isaias Morataya

“Trails”



Photo by Kris Peterson

Acadian

# EASTERN EMPID BILLS

All photos from:  
*Kaufman Field Guide to Advanced Birding*  
*Understanding What you See and Hear*  
Kaufman, Kenn, 2011

INCREASING BILL SIZE



Photo by Johnathan Irons

Least



Photo by Kevin Pero

Yellow-bellied



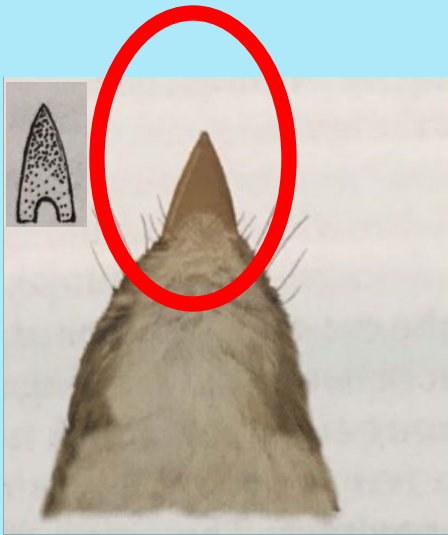
Photo by Matt Mason

“Trails”



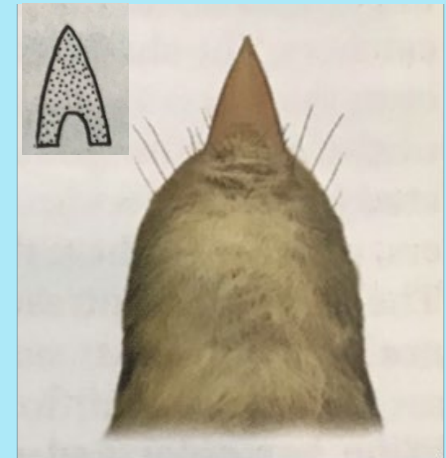
Photo by Peter Brannon

Acadian

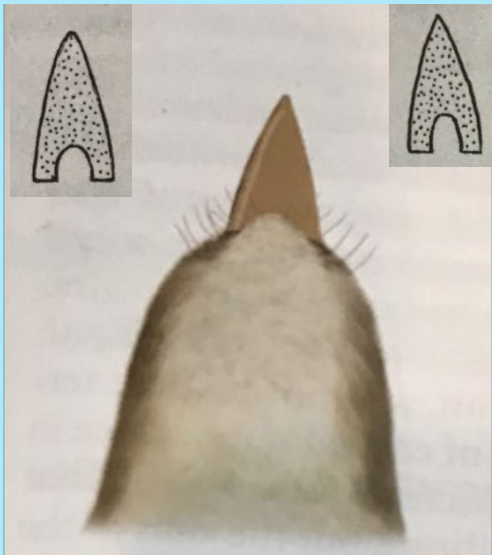


**Least**

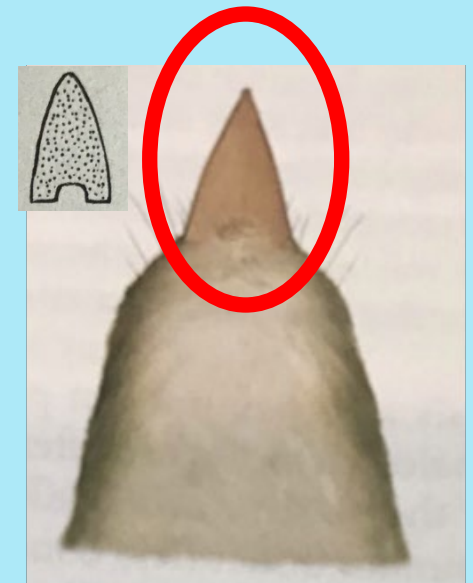
# EASTERN EMPIDS BILLS



**Yellow-bellied**



**Willow/Alder**



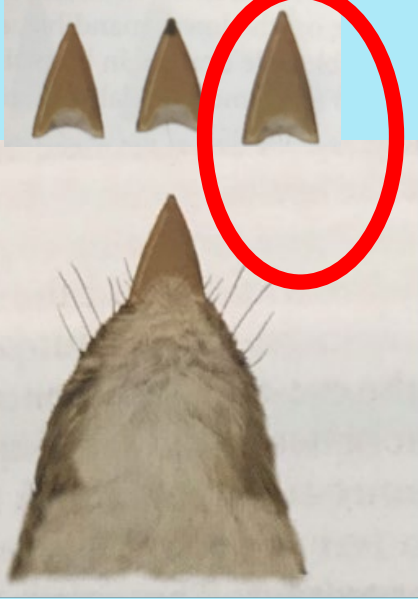
**Acadian**

Photos from:  
*Kaufman Field Guide to Advanced Birding*  
*Understanding What you See and Hear*  
Kaufman, Kenn, 2011

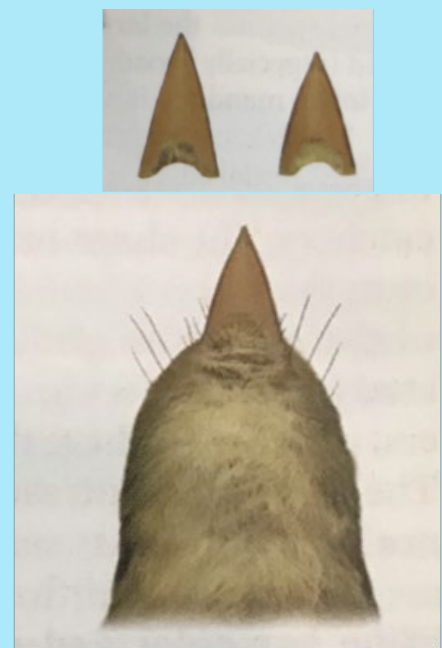
Illustrations from:  
*Birding in the American West*  
Zimmer, Kevin J., 2000

# EASTERN EMPIDS BILLS

All photos from:  
*Kaufman Field Guide to Advanced Birding*  
*Understanding What you See and Hear*  
Kaufman, Kenn, 2011



**Least**



**Yellow-bellied**



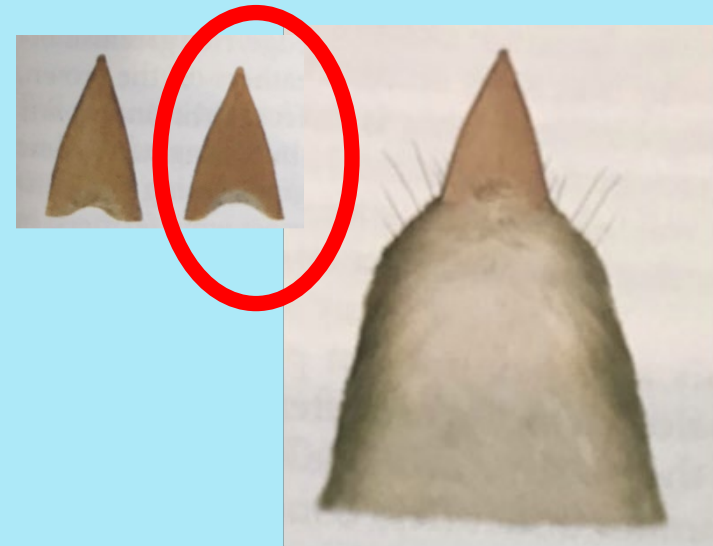
**Willow/Alder**



**Alder**



**Willow**



**Acadian**

# THE EMPID CHECKLIST

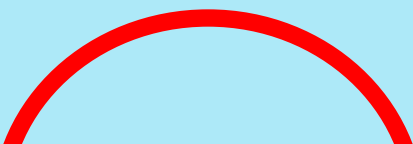
## FIELD MARKS (ATTRIBUTES)

- ▶ The Empid Bill
- ▶ Has been touted
- ▶ Difficult to observe
- ▶ Variable
- ▶ Can be diagnostic
- ▶ Can also confuse
- ▶ More useful for Western Empids
- ▶ **My recommendation:**  
**downgrade to “supporting”**

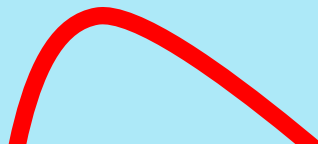
EMPIDONAX CHECKLIST:				
#	ATTRIBUTE			Rank
1	Structure	Wings	Wing proportions (wing length & primary projection)	A
2			Shape of primary tips	
3		Tail	Tail proportions & shape	B
4			Bill size, shape & color(s)	B
5		Head	Head shape & proportion to body	A
6			Crown of head (peak, crest)	
7			Forehead slope	
8		Body	Body shape	A
9	Plumage		Eye-ring	A
10			Wing-bars	
11			Throat color & contrast	B
12			Color of upper parts	B
13			Color of lower parts	B
14			Molt	
15	Other		Habitat/Micro-habitat	
16			Behavior	
17			Song	A'
18			Call	B
19			Migration	
20			Similar species	

# CROWN & FOREHEAD SHAPE

# CROWN SHAPE



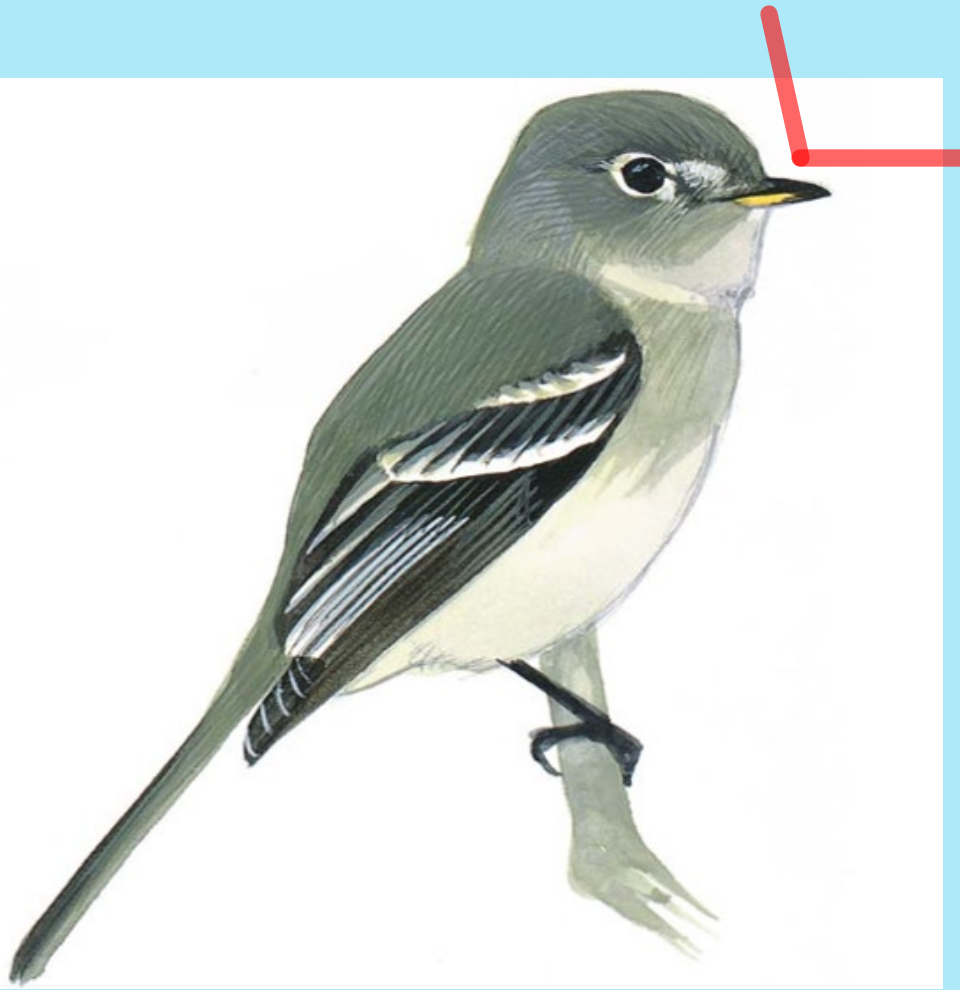
Rounded Crown



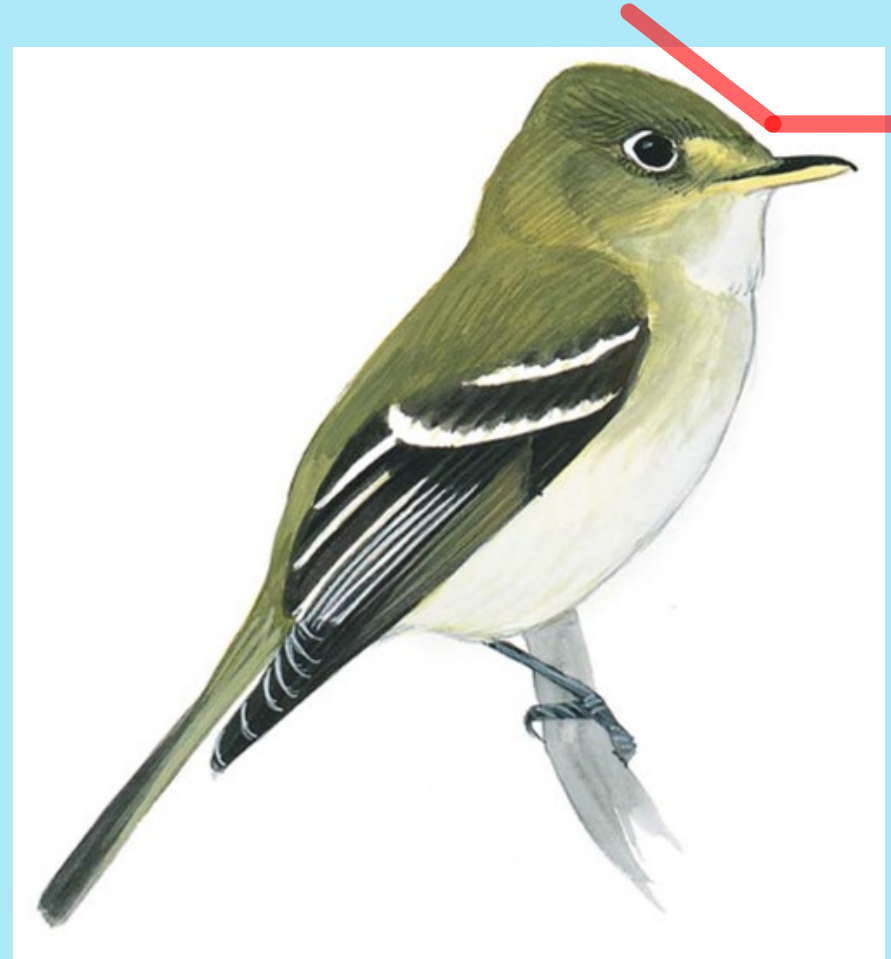
Rear Peaked Crown



# FOREHEAD ANGLE



Steep Forehead



Flat Forehead

# EASTERN EMPIDS BY DAVID A. SIBLEY

**Least**



**Yellow-bellied**



**Acadian**



**“Trails”  
(Willow)**



**“Trails”  
(Alder)**



All Illustrations  
by David A. Sibley  
From *Sibley Birds* app

# CROWN & FOREHEAD

Least



Photo by Jeffrey E. Patterson

**Crown Shape:** Roundish crown.

**Forehead Angle:** Steep forehead.

# CROWN & FOREHEAD

Least

**Crown Shape:** Roundish crown.

**Forehead Angle:** Steep forehead.



Photo by Juan Miguel Artigas Azas

# CROWN & FOREHEAD

Least



Photo by Deny Swaby

**Crown Shape:** Roundish crown.

**Forehead Angle:** Steep forehead.

# CROWN & FOREHEAD

Yellow-bellied



Photo by Luke Seitz

**Crown Shape:** Usually smoothly rounded, only occasionally with slight crested effect.

**Forehead Angle:** Steep forehead.

# CROWN & FOREHEAD

Yellow-bellied



Photo by Steve Tucker

**Crown Shape:** Usually smoothly rounded, only occasionally with slight crested effect.

**Forehead Angle:** Steep forehead.



# CROWN & FOREHEAD

## Acadian



**Crown Shape:** Forehead and front part of the crown look flat, often sloping up gradually to a point or corner at the rear edge of crown.

But crown also can look low and smoothly rounded in the rear.

**Forehead Angle:** Flat forehead.



# CROWN & FOREHEAD

## Acadian



Photo by Will Sweet

**Crown Shape:** Forehead and fore part of the crown look flat, often sloping up gradually to a point or corner at the rear edge of crown.

But crown also can look low and smoothly rounded in the rear.

**Forehead Angle:** Flat forehead.

# CROWN & FOREHEAD

“Trails” (Alder)



Photo by Ian Davis

**Crown Shape:** Sometimes gently rounded, sometimes peaked toward the rear, but always slender.

**Forehead Angle:** Shallow to medium.

# CROWN & FOREHEAD

“Trails” (Alder)

**Crown Shape:** Sometimes gently rounded, sometimes peaked toward the rear, but always slender.

**Forehead Angle:** Shallow to medium.



Photo by Sherrie Quillen

“Trails” (Willow)

# CROWN & FOREHEAD

**Crown Shape:** Distinct peak on rear crown..

**Forehead Angle:** Relatively flat.



Photo by Ethan Maynard

“Trails” (Willow)

# CROWN & FOREHEAD



**Crown Shape:** Distinct peak on rear crown..

**Forehead Angle:** Relatively flat.

Photo by Ceredig Roberts

# EASTERN EMPIDS: ONE MORE LOOK

**Least**



**Yellow-bellied**



**Acadian**



**“Trails” (Willow)**



**“Trails” (Alder)**



# THE EASTERN EMPID THOUGHT PROCESS (VISUAL DIAGNOSES)

